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EFFECT OF A PRACTICAL DIETARY REGIMEN ON SERUM CHOLESTEROL LEVEL

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The fact that experimentally produced atheromatous plaques are reversible lesions suggests the possibility of benefit from diets tending to lower the blood cholesterol levels. The effects of a diet of this sort were studied in 300 institutionalized patients under conditions permitting rigorous control. The significant feature was the use of a margarine containing 64.2% of nonhydrogenated corn oil. The kitchen staff prepared the same dishes as before with few modifications, and the transitions from contratest to test diet went unnoticed by the majority of patients and by many members of the staff. In a nine-month study it was shown that this dietary alteration raised the percentage of linoleic acid in the diet about 300% and significantly reduced the blood cholesterol levels in a manner acceptable both to the patients and to the staff.

THE medical literature over the past few years contains a wealth of material on the role of diet in relation to health and disease, particularly atherosclerosis, and a number of excellent reviews [1] have appeared. Data have been accumulated from many countries of the world, encompassing three principal disciplines: epidemiologic, experimental, and clinical. With few exceptions, the evidence points to a significant correlation between diet, hypercholesteremia, atherosclerosis, and coronary heart disease. Intensive research efforts are being directed toward gaining a better understanding of the nature of these relationships and the many factors known to influence them directly or indirectly.

The urgency of the undertaking is manifested by the fact that heart disease continues to be the number one cause of death in the United States and that the rate appears to be increasing rather than decreasing. Equally disturbing is the fact that atherosclerosis, the forerunner of coronary artery disease in 97% of the cases, is no longer solely a disease of the aged. Autopsy studies on soldiers with an average age of 22 years, who were killed in the Korean war, showed atherosclerosis to be present in 77% of the cases.[2] "Among adults in the United States, at least, the question is not who has atherosclerosis, but rather who has more and who has less." [3]

While the exact relationship between hypercholesteremia, atherosclerosis, and coronary heart disease still remains to be determined, evidence is

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steadily accumulating on the desirability of reducing cholesterol levels in those patients where they are elevated. The Framingham studies [4] have shown that persons with high cholesterol levels suffer a far greater risk of coronary heart disease than those with low levels. In this study of over 1,000 men, aged 45 to 62 years, covering a four-year span, the incidence of coronary heart disease varied from a low of 15 per thousand at one end of the scale, to a high of 295 per thousand at the other end. The three main factors implicated in the development of coronary disease were elevated serum cholesterol levels, high blood pressure, and excess weight. Data from such studies show that it is possible to quantitate the risk of coronary heart disease by evaluating these factors along with other pertinent information from the patient's history. The ability to classify a patient as a high coronary risk in an actuarial sense permits the timely application of appropriate prophylactic or therapeutic measures. With respect to the factors incriminated in these studies, blood pressure can now be controlled within limits, obesity can be corrected, and hypercholesteremia can be reduced.

Studies on the production of experimental atherosclerosis in animals have also yielded valuable information on the nature of this disease. It has been shown that within limits the atheromatous plaques are reversible lesions. Thus, arterial atheromas in rabbits, chickens, and dogs have been found to undergo gradual regression when the hypercholesteremia was corrected through dietary manipulation. In studies on human tissue cultures of aortic cell, the deposition of cholesterol has been accelerated by the inclusion of a saturated fatty acid (stearic) in the medium and has been inhibited by the inclusion of an unsaturated fatty acid (linolenic).[5] Numerous cases of regression of cutaneous xanthomas in persons placed on low-fat diets have been reported.[6] It seems clear that cholesterol deposits in at least some tissues can be resorbed in the human.

In 1952 Kinsell and co-workers [7] showed that the ingestion of diets rich in vegetable oils produced a fall in blood cholesterol levels and this observation was subsequently confirmed by other investigators. Later work showed that it was the essential unsaturated fatty acids in the diet which exerted the cholesterol-lowering effect, while the saturated fatty acids exerted a cholesterol-raising effect. These findings have given rise to a wholly new concept in the formulation of special dietary regimens, stressing the importance of the unsaturated versus the saturated fatty acid content. As information on amounts of these factors present in different foods has become available,[8] the therapeutic dietitian has received new tools with which to devise palatable, interesting, and effective blood cholesterol–lowering diets.

While direct clinical proof of the value of reducing elevated cholesterol levels is not yet available, supporting evidence in favor of such a step continues to accumulate. Morrison [9] has found that the use of dietary regimens designed to decrease blood cholesterol levels is followed by definite improvement in patients with angina pectoris or myocardial infarction, and Kinsell and co-workers [10] have seen functional improvement in patients with peripheral vascular disease which can be associated with reduced cholesterol levels.

Dietary supplements in the form of safflower oil, corn oil, and vegetable oil cocktails have recently been employed as means to reduce serum cholesterol levels with varying degrees of success. However, when used in effective amounts, the additional caloric intake presents real problems in weight control. The exchange of one fat isocalorically in the diet for another would obviate this difficulty. Since the removal of saturated fat from the diet has been shown to be more effective in reducing blood cholesterol levels than the addition of unsaturated fat,[11] the most expedient approach would appear to be the replacement of a regular article of diet rich in saturated fats with one rich in unsaturated fats.

Method

A corn oil margarine rich in essential unsaturated fatty acids was developed as a substitute for the ordinary solid fats in the diet, including those used for cooking [12] as well as those used for a spread. The margarine contains 64.2% nonhydrogenated corn oil and 15.9% of hardened fats. It contains 44.5% of linoleic acid calculated on the basis of total fat.

The effectiveness of a dietary regimen in lowering blood cholesterol levels in which this corn oil margarine replaced other solid fats in the diet was studied over a period of nine months. The work was carried out at the Farm Colony of Indiana's Central State Hospital where ideal conditions existed for the complete and rigorous dietary control of over 300 institutionalized patients. Subjects were ordinary psychotics free from any major organic disorder and included men and women in the ratio of approximately four to one. The average age of the patients, both men and women, was 60 years. The average weight of the men was 149 lb. (67.6 kg.); of the women, 136 lb. (61.7 kg.).

The diet kitchen was under the supervision and control of a graduate dietitian who prepared the menus and rotated them on a weekly basis. Dishes varied considerably from day to day but the over-all menu from week to week remained essentially constant. Meals were carefully planned so as to be nutritious, palatable, well balanced, and adequate for a population engaged in moderate physical activity. The same food was served the staff as the patients, and the meals were uniformly referred to

as being good. The control diet was simply a continuation of the regular diet in which butter, hydrogenated fats, and vegetable oils were customarily used either on the table or in the kitchen. The treatment diet was essentially the same, except that corn oil margarine was substituted routinely for these solid fats and was used as a table spread as well as for all cooking, baking, and frying, and, when melted, as a seasoning agent for vegetables. In the preparation of salad dressings and in other places where a liquid oil was desired, corn oil was used exclusively. The kitchen staff prepared exactly the same dishes as previously, serving the same kind and cuts of meat as before. Excess visible fat was removed, however, and bacon drippings were discarded. Reconstituted skim milk was substituted for whole milk, whether used as a beverage or in cooking, and sherbet was substituted for the ice cream served twice weekly. Aside from these changes, every effort was made to maintain the same basic diet during the treatment period as during the control period. Weekly menus for the control period and the treatment period were analyzed statistically for total calories, calories from fat, and calories from linoleic acid. The figures were calculated from the food supplied the kitchen, rather than the food consumed. No effort was made to measure the actual food intake during the study.

Serum cholesterol levels were determined at periodic intervals during the initial control period of three weeks, the treatment period of five months, and the post-treatment (control) period of three months. The analytical method used was a modification of the Schoenheimer-Sperry technique. A total of 301 patients were included in the study, although the number available for blood samples on any one occasion varied from 277 to 298. Determinations of serum cholesterol level were made 11 times over the course of the study for a total of 3,177 individual analyses—each done in duplicate.

Body weights were recorded at five different times during the study; once on the control diet, three times on the treatment diet, and once on the post-treatment (control) diet.

Results

The curves showing the variations in serum cholesterol levels for the 238 men, the 63 women, and the 301 men and women, averaged together over the three different periods of study, are presented in figure 1. It will be seen that the curves for the men and the women run remarkably parallel. The higher values for the women are in accord with reports from other investigators for this age bracket.[13] A 13% drop in serum cholesterol levels occurred for the combined groups within three weeks after the inauguration of the test diet, from 250 to 218 mg.%. The drop was accentuated as the treatment continued, reaching a maximum fall of 23% after five months on the diet, from 250 to 193 mg.%. When the control diet was reinstituted, serum cholesterol levels rose 19% over a three-month period, from 193 to 230 mg.%. These data are for the men and women grouped together. An examination of the weights for both men and women during the five different weighing periods showed that the maximum change for either sex between any two periods was less than 1 kg. (2.2 lb.).

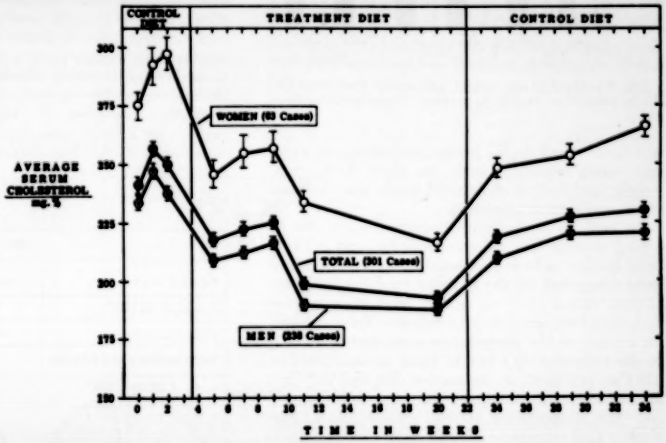

Fig. 1.—Effect of practical dietary regimen on serum cholesterol levels in 301 patients.

The data on cholesterol values were also analyzed in relation to three other factors, namely, age, weight, and control cholesterol levels for both men and women, as shown in figure 2. The comparison was made between the average of the three cholesterol levels during the control period with the average of the first three levels during the treatment period. The line of demarcation for any category was arbitrarily established at that point which would permit an equal number of cases to be above and below a given value. In the case of age, the dividing line was

60 years for both men and women. In the case of weight it was 149 lb. for men and 136 lb. for women. In the case of the control cholesterol level, it was 237 mg.% for men and 288 mg.% for women. A statistical evaluation of the cholesterol values for groups stratified on this basis showed no

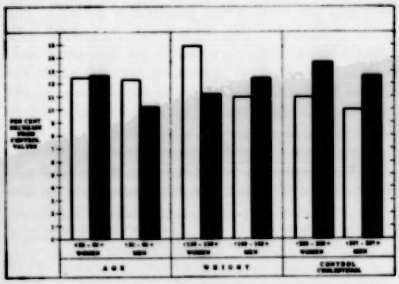

Fig. 2.—Effect of age, weight, and control cholesterol levels on percentage change in average values resulting from diet.

significant effect on the percentage change in average values resulting from the diet. Thus, age, weight, and control cholesterol levels were without effect under these conditions.

An analysis of the control and treatment diet in regard to total fats, calories from fat, and calories from linoleic acid is presented in figure 3. Values were computed on the basis of food supplied the kitchen rather than on actual food consumption and, therefore, are only approximate. Total calories for a week on the control diet amounted to 15,500; on the treatment diet 14,600. Total fat amounted to 828 Gm. per week on the control diet and 700 Gm. per week on the treatment diet, representing 48% and 43%, respectively, of the total calories. The linoleic acid content amounted to 60 Gm. per week on the control diet and 153 Gm. per week on the treatment diet, representing 7% and 22%, respectively, of the fat calories. The percentage of linoleic acid in the fat of the treatment diet was thus triple the percentage of linoleic acid in the fat of the control diet.

Comment

The treatment diet followed in these studies was unique in that it represented no conspicuous departure from the general food pattern to which the patients were accustomed. It allowed them to continue enjoying meals as they had always known them, without the need for acquiring new "tastes" for different dishes or for old familiar dishes prepared in a bland or unappetizing fashion. The treatment diet corresponded so closely to the regular diet that the transition went unnoticed by the majority of the patients including many members of the staff.

The study was designed to be conducted at a practical level in order to determine what results might be expected under normal operating conditions. No effort was made to influence the patients' voluntary intake of food at any time. The food consumption was virtually the same during the control and the treatment period, and there were no significant changes in body weight during the course of the study. Comparison of the percentage of calories from fat in the two diets showed a 5% lower level in the treatment diet. This can be accounted for largely by the use of skim milk in place of whole milk and of sherbet in place of ice cream. The influence of these minor dietary alterations in reducing serum cholesterol levels is considered relatively unimportant in this instance, since another study [14] in which these variables were excluded produced essentially the same response. The significant feature is that the percentage of linoleic acid in the diet was effectively raised about 300% without disturbing the basic dietary pattern or without the addition of added calories—thus offering no problems in patient acceptability or in weight control. While an institution provided the type of control group needed for a large scale study under standardized conditions, the findings would appear to be directly applicable to home use.

	CONTROL DIET	TEST DIET
TOTAL FAT	828 Gms.	700 Gms.
CALORIES AS FAT	48%	43%
LINOLEIC ACID	60 Gms.	153 Gms.
FAT CALORIES AS LINOLEIC	7%	22%

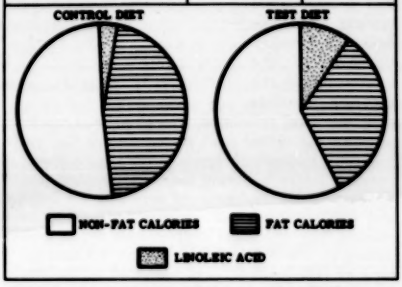

Fig. 3.—Amount of fat and linoleic acid in weekly diets.

Summary

In a nine-month study of over 300 inpatients in a state institution, it was found that a regimen employing a nonhydrogenated corn oil margarine for other solid fats as the principal dietary alteration was effective in achieving and maintaining a reduc-

tion in blood cholesterol levels. The dietary alteration was accomplished simply, easily, and inconspicuously, and with an excellent degree of patient acceptability.

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Dr. C. L. Williams, Superintendent of Central State Hospital, provided facilities for this study.

The corn oil margarine used in this study was supplied as Emdee margarine by Pitman-Moore Company, Indianapolis.

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AIR HYGIENE FOR HOSPITALS

II. EFFICIENCY OF FIBROUS FILTERS AGAINST STAPHYLOCOCCIC DROPLET NUCLEI AND BACTERIA-BEARING DUST

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A laboratory and operating room study shows that it is possible to provide absolute filtration of bacteria on dust particles and high retention of bacterial droplet nuclei through installation of certain deep-bed glass-fiber material in the hospital ventilating system. A glass-asbestos paper offered retention in the same range. No hospital should accept an installation which has not been found to retain at least 85% of atmospheric dust or its equivalent. Careful performance testing of the installation is essential.

There is general agreement that air supplied to delivery rooms, operating rooms, and nurseries should be free from dust and bacteria. On the one hand, pure air is needed to maintain dilution of airborne contaminants derived from human sources inside these areas; on the other hand, the demonstrated fact that pathogenic organisms may enter such spaces via air-conditioning ducts [1] must be guarded against by efficient cleaning of air supply.

To insure satisfactory performance over long periods, devices for delivering clean air should be simple and trouble-free and should require a minimum of maintenance.[2] Recent developments in the field of air filtration permit realization of these objectives at reasonable installation expense and low operational costs. This paper reports studies of the arrest of bacteria-bearing particles by fibrous filters in experimental and actual situations.

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Bacteria in air occur as droplet nuclei or are attached to minute particles of dust, lint, or skin. The former are produced by the atomization of re-

spiratory secretions, as during talking, laughing, coughing, or sneezing. These droplets approximate 10μ in diameter and evaporate almost instantly in air of a relative humidity of less than 100%.[3] The droplet nuclei which remain after evaporation consist of one or more bacteria with a coating of dried organic material. They are usually between 1.34 and 2.68μ in diameter [4] and settle at an average rate of 0.04 ft. per minute in still air. As convection currents tend to keep room air in constant motion, bacterial droplet nuclei tend to remain in a state of continuous suspension.

Bacteria-bearing dust particles are thought to vary greatly in size and to be much larger than droplet nuclei. Most of them settle at 1 or 2 ft. per minute in still air,[5] but some may be continuously suspended in moving air.

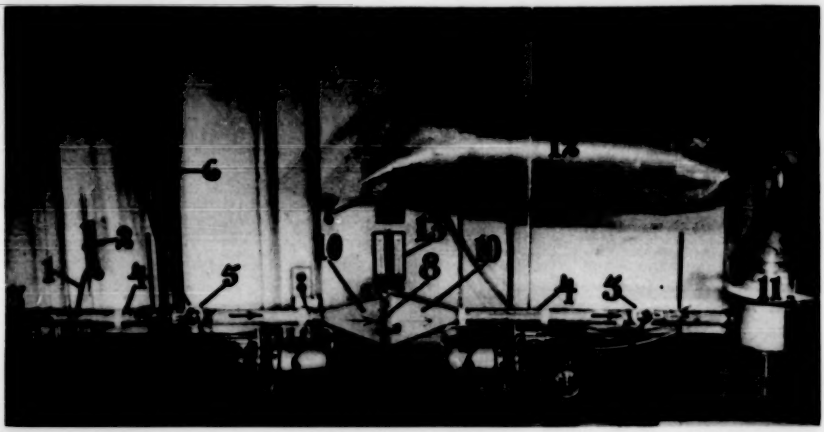

Fig. 1.—Filter-blower system: 1, nitrogen supply line; 2, flow regulator; 3, DeVilbiss 40 nebulizer; 4, location of dispersion disk; 5, sampling point (MF holder); 6, mercury manometer; 7, vacuum pumps; 8, filter medium in holder; 9, water gauge manometer; 10, filter holder; 11, fan; 12, calibrated bag (not used during tests); 13, wet and dry bulb thermometers.

Ventilating air is cleaned by passage through devices which operate on one of the following principles: (1) impingement on mediums coated with viscous material, (2) impaction on fine fibers of dry porous mediums, (3) electrostatic precipitation, or (4) washing or scrubbing by passage through wet cells or fine sprays.[6]

The antibacterial efficiency of viscous and wet cell filters is too low to warrant their use in critical hospital areas. Electronic air cleaners have been reported [7] to possess high efficiency against airborne bacteria and viruses but will not be discussed in this paper. Fibrous filters may be made of fabric-like mediums of wool felt or cotton batting or cloth; deep-bed mats composed of glass fibers averaging between 0.8 and 3.0μ in diameter, which may be bonded together by phenolic resins; or papers of cellulose and asbestos, glass, glass and asbestos, or ceramic fibers with or without a binder. A great increase in filtering surface can be achieved by pleating these materials. Air velocities through the medium usually range from 5 to 25 ft. per minute. In general, units presenting a superficial area of 4 sq. ft. provide an air flow of 1,000 cu. ft. per minute at an average duct velocity of 250 ft. per minute. Retention of particles by these mediums is largely the result of inertial impaction of particles on fibers. In addition, the static gas film around fibers may interfere with the passage of particles.

Although physicians do not ordinarily carry out performance tests on air filters, an understanding of the basis for efficiency rating is important. This is because a filter which is highly efficient against particles 10μ in diameter may be extremely inefficient against particles 1μ in diameter. A case in point is the poor performance of viscous filters against atmospheric dust.

Deep-bed mats composed of glass fibers averaging between 0.8 and 3.0μ in diameter are rated by the National Bureau of Standards (NBS) discoloration test with atmospheric dust used as the test material; that is, against particles averaging 0.5μ in diameter. Their efficiency increases with the useful life of the filter as particles build up on the filter face. Efficiencies from 35 to 95% over the life of different grades of filters are achieved at the rated velocity. The initial resistances of the various mediums range from 0.14 to 0.48 in. water gauge at the rated velocity.

Paper filters are rated by the NBS discoloration test or in terms of their efficiency against dioctyl phthalate (DOP) smoke, an aerosol of particles uniformly 0.3μ in diameter. Absolute filters achieve a minimum guaranteed arrest of 99.95% against DOP smoke. Their retention of bacteria approaches 100%. This high efficiency is obtained at the cost of increased resistance to air flow.

Experimental Studies

There are few studies of the efficiency of fibrous mediums against micro-organisms. Decker and coworkers[8] tested the efficiency of three grades of glass-fiber pads and of two types of mineral papers against freshly atomized aerosols of Serratia indica and Escherichia coli T-3 bacteriophage. A single-thickness pad possessing the characteristics of Filterdown 50-FG retained 99% of the bacteria and 98% of the bacteriophage. Penetration of the glass-asbestos paper was 2.8 to 14 per 10 million organisms; of type E glass paper, 1 to 2 per 100 million organisms.

The downstream section of the filter holder incorporated a fine, stiff stainless steel screen to provide backing for the filter medium being tested. The screen was spot-soldered to the flange, and the interstices of the meshwork were filled with aluminum powder in a plastic base so as to present a flush, smooth border 1.25 in. wide around the periphery of the filtering surface. A gasket of spun glass fiber was cemented to the downstream flange and one of 0.12-in. foam rubber to the upstream flange. Clamps were used to maintain firm pressure through the opposed flanges on the filter medium between the gaskets.

The ducts were equipped with dispersion disks located five duct diameters upstream from each sampling point to provide thorough mixing of the aerosol before sampling. The sampling points were located 20 in. downstream from the intake and from the filter holder respectively. All joints were made airtight with sealing tape.

Air samples were taken through right-angle glass tubes, 6 to 8 mm. in diameter, inserted through the

TABLE 1.—*Characteristics of Fibrous Filter Materials*

Code	Trade Name	Material	Diameter of Glass Fiber,μ	Efficiency, %*	Rating Test	Rated Velocity, Ft. per Min.	Pressure Drop, In. H_2O§	Efficiency vs. Bacterial Droplet Nuclei, %	Efficiency vs. Dustborne Bacteria, %
H 98....	CM 114	Glass-fiber paper	<1.0	99.97	DOP†	5.5	0.90	99.97	100
H 98 B.	Microtain	Glass-asbestos paper	<1.0	95	DOP	5.0	0.40	96.7-98.1	100
Ceramo-fi....	Fiberfrax	Aluminum silicate paper	2.4	82	DOP	5.0	0.18	97-98	>99
50-FG..	Filterdown	Glass-fiber mat	1.25	90-95	NBS‡	21.0	0.48	87-99	>99
C 95....	Aerosolve 95	Glass-fiber mat	1.0-1.1	90-95	NBS	23.0	0.35	89-98	>99
C 85....	Aerosolve 85	Glass-fiber mat	0.8-0.9	80-85	NBS	25.0	0.22	54-69	...

* During useful life of filter.
† Dioctyl phthalate 0.3 μ smoke.
‡ National Bureau of Standards discoloration test.
§ At rated velocity.

Because the bacterial species used by these workers is particularly vulnerable to drying,[9] and because neither it nor the bacteriophage is likely to be encountered in environmental air, it seemed desirable to confirm these studies and to extend them to a pathogenic species more resistant to drying, to bacteria attached to dust particles, and to other filter materials. At the same time an opportunity was afforded to compare two sampling techniques in the light of newer knowledge regarding one of them.[10] With these purposes in mind the following test situation was established.

Materials.—A filter-blower system was adapted for bacterial sampling of air upstream and downstream from the filter medium. The assembly (fig. 1) consisted of several feet of round, galvanized, sheet metal duct 2 in. in diameter, a filter holder composed of two four-sided funnels with flanges by means of which the funnels could be clamped base to base, and a fan at the downstream end of the system. The filtration surface was 6.5 in. on a side, with an area of 0.29 sq. ft.

duct wall and pointing upstream in the center of the duct. The air was sampled for bacterial content either by filtration through cellulose ester gel membranes (Millipore filters [MF]) or by bubbling through critical orifice liquid impingers containing 200 cc. of 3.2% brain-heart infusion with 0.2% gelatin solution,[10] the stem being 4 cm. from the bottom of the container. The pH of the impinger fluid was 7.2. A loopful of a silicon antifoaming agent (Antifoam A) was added to each impinger. Sampling rates were 2.0 to 4.5 liters per minute, a pressure drop of 24 in. Hg being maintained across the critical orifices during operation. The dimensions of the sampling tubes were selected to make the sampling velocity approximately isokinetic with the central duct velocity.

Fresh aerosols were produced by atomization of bacterial suspensions from a DeVilbiss 40 nebulizer activated by nitrogen from a commercial cylinder at a flow rate of 6.4 liters per minute; 12-to-24-hour broth cultures of Staphylococcus aureus (Food and Drug Administration strain 209, American Type Culture Collection 6538) were diluted with sterile

distilled water to a degree suitable for sampling after nebulization. The organisms were less than 1μ in diameter and were highly dispersed.[11]

Dry aerosols were produced by insufflating fine dust obtained from the filter cones of ward vacuum cleaners into the duct from a powder blower. These dust-coated cones retain almost 100% of airborne bacteria contacting them.[11] The principal species recovered from this dust were represented by strains of yellow and white staphylococci, hay bacilli, sarcinae, and assorted molds. It is probable that the bacterial particles were not in a state of high dispersion in these aerosols.

The properties of the several filter materials tested are shown in table 1. At least three samples from one or more lots of each medium were tested, and at least three trials were made with each sample.

Operation.—The humidity of the room air was adjusted to the desired level by allowing steam to flow from the chamber of an autoclave into the room. The rate of air flow through the system was adjusted by controlling the fan speed to produce the desired velocity at the filter face. Flow rates were measured directly by timing the inflation of a calibrated bag of light-weight polyethylene, capacity 5.5 cu. ft. (fig. 1).

TABLE 2.—*Retention of Nebulized Staphylococci by a Single Pad of Filterdown 50-FG**

Sampler	Colonies per Liter†		Efficiency, %
	Upstream	Downstream	
Millipore filter	257	3.4	98.68
Impinger	920	9.4	98.98
Impinger: Millipore filter	3.57	2.75	

* Temperature 23 C, relative humidity 34%.
† Sampling rate, 2 liters per minute.

With air flowing through the system at the desired rate, fresh or dry aerosols were introduced at the intake and allowed to flow for from 1 to 30 minutes before sampling was begun. Sampling was carried on simultaneously at the upstream and downstream sampling points, usually for 60 seconds.

At the end of each run, the filter membranes were transferred to the surface of trypticase soy agar plate or aliquots of the impinger fluid were filtered through Millipore filters (HA type) which were incubated on the same solid medium. After incubation of the plates at 37 C for 24 hours and 22 C for 12 hours colonies were counted under magnification, using the ophthalmic biomicroscope and slit lamp (Zeiss Opton).

Conditions and Controls.—The temperature during these experiments varied from 21 to 24 C; the relative humidity was adjusted between 31 and 71%. The construction of the system insured that no room air was drawn into it or the samplers other than that which was introduced at the intake. Organisms present in the room air were not of the test species and were numerically insignificant in proportion to those in the artificial aerosols, and their occasional presence appeared to have no effect on the results.

In a representative number of trials, but not in all, the filters and the downstream sections of the filter holder and ducts were sterilized by hot air between tests. Failure to sterilize them in other trials appeared to make no difference in the results of these tests, presumably because the test organisms were not present on, or were not liberated by blow-off from, the filter pads or the interior surfaces of the ducts in significant quantities. The sampling membranes were sterilized by autoclaving.

The experimental techniques used in this study are described more fully in the first paper of this series.[11] At the relatively low filtration velocities and the relatively small sampling volumes used in the present study there was no evidence that variation of the relative humidity within the range recorded above had any effect on either the efficiency of filtration by the glass-fiber materials or the recovery of organisms on the sampling membranes (MF). In contrast to conditions in the former study [11] there was no warming or drying of air during its passage through the filter-blower system. Humidification of sampled air by passing it through 18-in. by ¾-in. tubes containing rolled moist filter paper failed to increase the yield of organisms on the MF in comparative tests with air of 39% relative humidity at a sampling rate of 2 liters per minute.

There was no evidence of increasing penetration of the fibrous materials with time. Rather, it was clear that accumulation of dust on the filters increased their retention of bacteria. Filterless trials indicated an expected recovery rate of 90% or better at the downstream sampling point. No correction for this factor was made in calculating efficiency of filtration.

Results.—The findings recorded in table 1 refer to retention of bacterial droplet nuclei by new, unused filter materials in terms of the dry (aerosol assay) Millipore filter sampling technique. When parallel sampling by this method and by liquid impingers operated at an identical rate (2 liters per minute) was conducted simultaneously at both the upstream and the downstream sampling points, impinger counts were 3.3 to 3.57 times those on the MF at the upstream point and 2.75 to 2.9 times those on the MF at the downstream point. In spite of the threefold disparity in absolute values filtration by the glass-fiber medium demonstrated by both methods was of the same order of efficiency. It is presumed that the larger number of organisms recorded by the impinger represents both break-up of bacterial aggregates by it and decay of organisms after contacting the MF surface. The former factor could account for the slightly higher efficiencies demonstrated by the impinger technique, since aggregates

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which would produce only a single colony on the MF would presumably be arrested by the glass-fiber filters more readily than single cells. The fact that the efficiency of the more retentive materials appeared nearly the same by both methods is consistent with monodispersion of the particles in the aerosol. A typical trial is shown in table 2.

Of the deep-bed materials, clean single-thickness pads of Filterdown 50-FG ordinarily retained 98.5 to 98.7% of freshly nebulized bacterial aerosols. Impinger samples confirmed the 99% retention reported by Decker and his group for the same medium. However, one substandard lot was received which passed up to 15% of droplet nuclei. This was returned to the manufacturer, who confirmed the poor performance of the sample and stated that steps had been taken to prevent release of substandard lots in the future. Single-thickness pads of Aerosolve 95, a deep-bed medium of considerably lower resistance to air flow than Filterdown 50-FG, showed an average retention of 95% with a range from 89 to 98.5% in different runs. Retention of droplet nuclei by dust-laden filters was higher than by clean filters. Both mediums retained essentially 100% of bacteria-bearing dust particles produced by the powder blower. It is reasonable to assume that any medium retaining 90% or more of an aerosol of droplet nuclei would retain essentially 100% of bacteria attached to atmospheric dust particles.

Unlike absolute filters deep-bed filters are not individually guaranteed as to their efficiency by the manufacturer. This fact suggests the need for testing the performance of individual filters used in critical situations, especially in view of the variation we have observed in different lots of deep-bed material.

Penetration of the glass and glass-asbestos papers by droplet nuclei was roughly in proportion to their DOP ratings. The high retention of these mediums was achieved only at a resistance to air flow significantly greater than that offered by the deep-bed mediums. A cotton surgical face mask retained less than 20% of staphylococcic droplet nuclei.

Field Studies

Because of abnormally high bacterial counts in the operating rooms, a survey of the two operating suites was undertaken. With use of titanium tetrachloride as an indicator it was determined that air from the corridor was being drawn into each of the four eye operating rooms and exhausted through ceiling ports in the scrub rooms and anesthesia rooms. When the doors to the corridor were closed a brisk flow of air under them into the operating rooms was apparent. The air flow at either end of the main corridor of the operating suite was then tested, and it was found that air was being drawn under and between the double doors which opened into the main stair well of the hospital at one end of the corridor and into the ear, nose, and throat outpatient clinic at the other. A similar situation was encountered in the ear, nose, and throat operating suite on the floor above.

A survey by ventilating engineers confirmed these findings. It was brought out that the air-supply fans had been slowed in order to reduce the intake of outdoor dust through viscous panel filters. At the same time exhaust fans in the anterooms continued to operate at their original speed, so that a negative air pressure was created in the operating rooms. The parallel between this situation and that reported by Blowers and co-workers [12] is striking.

In accordance with the consultants' recommendations the exhaust ports were sealed off and fan speeds increased to the maximum, 1,700 revolutions per minute, creating a positive pressure in the operating rooms. Air escaped by exfiltration under doors and through louvers into surrounding areas. The total air flow thus provided was between 500 and 600 cu. ft. per minute for each operating room, with 100% outside air, providing about 12 air changes per hour. Viscous filter panels in the intake ducts for outside air were supplemented by banks of deep-bed glass-fiber filters (Aerosolve 95) in the distribution ducts to each operating room.

TABLE 3.—*Performance of New Filters to Operating Rooms Against Nebulized Staphylococci**

Room	Colonies per Cu. Ft.		Efficiency, %
	Upstream	Downstream	
1	5,400	160	97
2	3,600	170	95
3	2,400	170	93
4	8,000	228	97

* Pressure drop: 0.24-in. water gauge; 15-min. trials at 2 liters per minute.

In order to test the efficiency of the completed installations, samples were taken from the ducts at suitable locations upstream and downstream from the banks of filters while freshly nebulized and dry dust aerosols were being introduced through openings in the duct wall into the air stream from the supply air fan. The first tests showed penetration of the order of 50%. The fault was traced to defective installation and token calking of the cadmium-plated filter frames in the ducts and to omission of the tie-rods used to seat the filter cartridges firmly against the felt gaskets in the frame. This omission was contrary to the manufacturer's specifications. In one instance the metal-tapping screws used to fasten the water gauge manometer to the duct wall had forced the filter frame inward away from the duct. After correction of these deficiencies, retention of the order of 95% was found for droplet nuclei (table 3). The effect of ventilation on the concentration of droplet nuclei (Staph. albus) nebulized into an operating room is shown in figure 2.

Comment

Selection of a filter for a given purpose represents a compromise between high efficiency and low pressure drop (inversely reflecting power cost) and service life.[13] For air supplied to hospital operating rooms, delivery rooms, and nurseries, this compromise must be resolved in terms of the expected microbiological and particulate challenge to the filter and the efficiency of cleaning required of the filter against the expected challenge.

The state of bacteria and molds in outside atmospheric air is not entirely clear. Colebrook and Cawston[14] found a preponderance of nonpathogenic bacteria and molds with occasional colonies

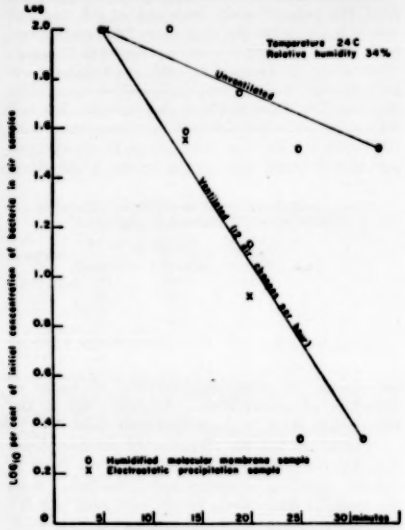

Fig. 2.—Rate of disappearance of Staphylococcus albus from ventilated and unventilated rooms.

of Staph. aureus in air sampled on the roof of their hospital. There was no way of telling whether these organisms were free-floating or attached to dust particles. The infrequency of the common human respiratory pathogens in their samples suggested that few bacteria existing as droplet nuclei survive drying and exposure to atmospheric conditions out of doors.

The efficiency of the deep-bed mediums Filterdown 50-FC and Aerosolve 95, together with a high rate of flow at a low pressure drop across the filters, renders them acceptable for filtration of ordinary atmospheric air supplied to critical hospital areas. The high pressure drop across the absolute and semiabsolute mediums would make their use appear uneconomical for air supplied to spaces in which human beings are continuously liberating organisms from their persons.

No filter medium can be better than the tightness of its installation. As air seeks the path of least resistance, the volume of air bypassing a loosely installed filter bank will increase with the build-up of dust in the filter bed. At the same time, low manometer readings may give the erroneous impression that the filter bed is operating well below its maximum permissible pressure drop, when actually the reverse is the case.

Unlike a plumbing installation a faulty air filter assembly shows no immediate sign of leakage. Because the load of particles entering the air intake during any short period of time is small, dust and bacteria may accumulate before spilling over into a channel. If alternate moisture and drying exist at an upstream location, bacteria which have proliferated during the moist phase may strike the filter face en masse during the dry phase. Detection of leakage would thus depend on prolonged sampling, fortuitous sampling during a period of spillage, or performance tests using a standard challenge of dust or bacteria.

Neither the contractor nor the consulting engineer carried out a performance test of the filters installed in the ducts leading to our operating rooms. Moreover, the consultant failed to detect the contractor's failure to meet the manufacturer's specifications for installing the filters. No hospital should accept an installation which has not been found to retain at least 85% of atmospheric dust or its equivalent. Ventilating engineers should be prepared to certify the initial performance of any high-efficiency filter system and to spot-check any sample of fibrous medium for substandard efficiency.

A correctly installed bank of deep-bed glass-fiber filters protected by suitable viscous or electronic prefilters requires remarkably little maintenance. After six months of continuous (24-hour) operation, the pressure drop across the filters for our operating rooms had risen from 0.25 to 0.42 in. of water (maximum allowable dirty drop is 0.8 in. of water). Other advantages include disposability, ease of replacement, and retention of dust during filter changes. Heavy particles on the duct floor should be removed by vacuum cleaning at the time of filter changes.

The ceramic paper is intended for high-temperature dust filtration and would not normally find an application in hospital ventilating systems. The absolute mediums, because of their higher resistance to flow, are not ordinarily used in air supply systems for hospitals.

The glass-asbestos paper (Micretain) is stated by the manufacturer to be suitable for use in supply systems to operating rooms. A cartridge presents 200 sq. ft. of pleated filtering surface and permits an

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air flow of 1,000 cu. ft. per minute at a clean rated pressure drop of 0.4 in. water gauge. Because of its higher efficiency, greater uniformity, and longer service life (4,000 hours with adequate prefiltration) the manufacturer believes that this will be an economical filter for critical hospital air supply situations.

The excellent retention rate of several fibrous filters suggests the desirability of designing ventilating systems to permit partial recirculation of air. The advantages of recirculation in permitting easier and cheaper control of temperature and humidity are obvious, especially where explosive vapors are not in use. Even when volatile agents are being used Thomas [15] feels that the present requirement of 100% outside air is unreasonable and that 50% recirculation would be perfectly safe at the same relative humidity.

In ordinary ventilating situations the need to sterilize fibrous filters in place does not arise. If it became necessary to sterilize a heavily contaminated exhaust filter this could be done with beta-propiolactone in the vapor phase [16] or with ethylene oxide in suitable combination with an inert gas.

The high efficiency of Filterdown 50-FG permits other applications in the field of air filtration. At the suggestion of Snow [17] this material has been employed as a tertiary filter in an industrial vacuum cleaner (Kent Quiet Junior) which is suitable for use in hospitals. At a volume output of 135 cu. ft. per minute and at an air velocity of 210 ft. per minute through the medium, a single-thickness pad of Filterdown 50-FG placed upstream from the twin motor intakes retained 99.8±0.2% of nebulized staphylococci either alone or in conjunction with the normal primary (paper bag) and secondary (cloth bag) filters of the machines. The higher efficiency observed at the higher velocity is consistent with arrest by inertial impaction.

The low resistance to air flow of Aerosolve 95 and 85 suggests a possible application in surgical masks. We are currently exploring the use of these materials as a better means of checking bacteria of respiratory tract origin at their source.

Conclusions

A supply of clean air cannot by itself eliminate infection, but a supply of unclean air cannot be tolerated in a hospital. Adequate cleaning of air by filtration through efficient fibrous mediums or by electrostatic precipitation is mandatory for operating rooms, delivery rooms, and nurseries. Performance testing of any installation for high-efficiency fine filtration is essential. If an electronic air cleaner is used, incorporation of an efficient fibrous filter between it and the space being ventilated is essential. Two deep-bed glass-fiber materials were found to provide absolute filtration of bacteria on dust particles and high retention of bacterial droplet nuclei. A glass-asbestos paper intended for hospital use offered retention in the same range.

200 Beacon St. (16).

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POISONOUS SNAKE BITES

REPORT OF A CASE

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A 39-year-old man was bitten on the back of the hand by a rattlesnake (Crotalus adamanteus) 122 cm. in length. Immediate treatment consisted of suction and application of a tourniquet. Subsequent alarming symptoms were treated by multiple incisions; hypodermic injections of an antivenin; sedation with phenobarbital sodium; venoclysis with sodium chloride, dextrose, and calcium; administration of penicillin and streptomycin; transfusion of whole blood; and the oral administration of atropine, antacids, and diphenhydramine hydrochloride. Systematic observations on the blood-clotting mechanisms showed that clotting could not be induced and fibrinogen was completely absent three hours after the bite. All figures relating to coagulation were normal one day, five days, and six days after the bite, but the patient was not free from symptoms of serum sickness and other complications until the 12th day.

There are 2,500 species of snakes in the world, but less than 200 of them are poisonous to man.[1] In the United States at least 35 species and subspecies of poisonous snakes are known. Estimates on the incidence of snake bite in this country range as high as 3,000 per year,[2] but the death rate from snake bite is low—perhaps 10 or 20 per year.[3] Poisonous serpents are found in 47 of the states, Maine and Alaska being the exceptions. Most of the fatal bites occur in the South and Southwest, where there are more snakes and conditions favor greater exposure. With the increasing popularity of camping and other outdoor activities, there is a possibility that victims of snake bite may become more numerous and the geographical incidence more widespread. Recently we had the opportunity of treating a victim of snake bite. It is incumbent on every physician, regardless of his location, to be prepared for such an emergency.

Report of a Case

A 39-year-old zoo keeper was bitten on the back of the right hand by a 4-ft.-long diamondback rattlesnake (Crotalus adamanteus) on April 23, 1958. Within 10 minutes an incision was made at the bite site and a tourniquet applied at midforearm. The victim sucked at the wound while he was rushed to the Hospital of the University of Pennsylvania, arriving there about 30 minutes after the accident. By this time his hand and forearm were intensely swollen and there were patchy areas of ecchymosis. It appeared that only one fang had penetrated the skin between the third and fourth metacarpal heads on the dorsum of the hand, but there were several other lesser teeth marks. Despite severe swelling and discoloration of his hand, the wound was only moderately painful.

The tourniquet was moved higher on his arm, and the wounds were opened wider. Additional incisions were made on the forearm at the edge of the swelling. Five ampuls of antivenin were injected into the hand and at various levels up his arm. During these procedures the patient first began to manifest evidence of systemic reaction. He began to perspire freely and to complain of perioral numbness that made speaking difficult. Coarse muscle twitches and fasciculations began in his chin and neck and gradually spread to involve virtually all muscle groups. Cyanosis of the lips and tongue was noted. He began to vomit and did so repeatedly for approximately eight hours. Phenobarbital sodium was given parenterally, and his condition was maintained with intravenous administration of dextrose and saline solution, to which was added calcium gluconate in an attempt to control the twitching. Penicillin and streptomycin therapy was instituted.

Saline compresses were applied to his wounds. He was given 500 ml. of whole blood because of continuous ooze from the wounds. Coagulation studies done three hours after admission indicated afibrinogenemia. Fibrinolysins were not found. Because there was no evidence of bleeding except from the sites of the wounds, administration of fibrinogen was withheld. Within 24 hours his clotting functions were almost normal.

The initial hemoglobin value was 13.7 Gm. per 100 ml. Urinalysis disclosed 3+ proteinuria and urine was otherwise free of abnormalities. At no time was there evidence of hemolysis such as hemo-

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globinemia or jaundice. Red blood cell osmotic fragility was normal. The stool was negative for occult blood.

During his first 24 hours in the hospital, the patient was given an additional 5 ampuls of antivenin, making a total of 10. On the day after admission his hemoglobin level was 10.8 Gm. per 100 ml. and it was assumed that the fall was due to bleeding from the wounds. His systemic symptoms then were abating, and he was able to take nourishment by mouth. The muscular twitching ceased 48 hours after admission. He had moderate fever with peaks to 101 F (38.3 C). Four days after admission his reticulocyte count was 5.2%. The next day the hemoglobin level dropped to 9.6 Gm. per 100 ml. and he developed more fever with elevations as high as 104 F (40 C). At this time his stools gave a 4+ guaiac reaction. Generalized lymphadenopathy became apparent, and he developed an urticarial rash that became confluent and involved almost his entire body.

His white blood cell count rose to 11,900 per cubic millimeter with 8% eosinophils. The gastrointestinal bleeding was treated with transfusions and administration of atropine, milk and cream, and antacids. He received only diphenhydramine (Benadryl) hydrochloride to combat the serum reaction. Steroids were avoided because of the gastrointestinal bleeding.

On April 30, seven days after admission, a gastrointestinal series showed changes suggestive of postbulbar ulcer. Late that evening he vomited some coffee-ground material and his abdomen became distended. His stomach was emptied by means of a Levin tube, and feedings were continued after discontinuing the large doses of atropine. The next morning the distention was no longer present and he felt much better. On the 10th hospital day his fever began to abate and he showed rapid subjective improvement. His stools became negative for occult blood. The wounds on his right hand and arm were healing rapidly. On the 13th hospital day the gastrointestinal series was repeated and was interpreted as normal. He had been afebrile for 48 hours when discharged on the 14th day.

Coagulation Problems

The initial coagulation studies in our patient (see table) suggested that the main defect was afibrinogenemia. All of the abnormalities noted could be explained by the fact that fibrinogen was absent from the blood. We were unable to demonstrate fibrinolysins in the original sample of blood taken three hours after the bite. When added to normal blood or to a 1% solution of fibrinogen, a clot formed, though the clotting process was delayed. When Vipera russelli venom was used as the source of thromboplastin no clot was obtained. This venom will normalize the abnormal prothrombin time if a patient is deficient in proconvertin.

To ascertain the in vitro effects of Crotalus venom on normal oxalated plasma (nine parts of blood to one part of potassium oxalate), lyophilized venom was diluted with saline solution and equal parts (0.2 ml.) of this solution and the plasma were tested. Clotting times were 5 seconds with 1 mg. of venom per milliliter, 64 with 0.2 mg., and 100 with 0.1 mg. Recalcification time of the substrate plasma was 270 seconds. Thus, the venom clotted the oxalated plasma directly without the addition of calcium ions or other factors. It is therefore confirmed that the Crotalus venom converts fibrinogen to fibrin without other factors, as does thrombin.

Coagulation Studies in Patient with Snake Bite

Test	Normal Values	Results (After Bite)			
		3 Hr.	24 Hr.	5 Days	6 Days
Clotting time, min.	12-20	No clot in 36 hr.	12	13	10
Prothrombin consumption, sec.	15 greater than Quick 1-stage prothrombin time	No clot	25.5	22.2	36.1
Clot retraction	Good to excellent	No clot	Good	Excellent	...
Recalcification time, sec.	150-270	No clot	240	300	180
Quick 1-stage prothrombin time, sec.	12-14	No clot	14.2	13.4	13
Labile factor, %	More than 50% of control value	40	92	82	72
Stable factor	More than 50% of control value	No clot	Normal	Normal	Normal
2-stage prothrombin time, %	...	77	100	100	100
Fibrinogen level, mg. %	250-400	0	...	...	...
Fibrinogen index (Fibrindex), sec.	5-10	No clot	12	5.4	6
Platelet count/cu. mm. (Rees-Ecker)	150,000-350,000	177,000	...	140,000	130,000
Thromboplastin generation	...	...	Normal	Normal	...

We believe the thrombin-like activity of the venom eventually led to defibrination of the blood with the resultant incoagulability. The deposition of the fibrin clots must have been in silent areas, for no evidence of thrombosis was found clinically.

Comment

Most of the poisonous snakes in the United States are pit vipers or Crotalidae. These include the numerous species of rattlers (genera Crotalus and Sistrurus), the copperhead (Agkistrodon mokasen), and the cottonmouth or water moccasin (A.

piscivorus). The coral snake (family Elapidae, genus Micrurus), endemic to the southern states, is related to the cobra and is not a pit viper. All the Crotalidae are front-fanged serpents, generally nocturnal in their habits, and usually capable swimmers. They are equally dangerous on land or in water. They are not aggressive and strike usually only for food or in self-defense.

A number of factors affect the gravity of a snake bite.[4] The age and size of the victim are important. Very young and very old persons are more susceptible to serious aftermath. A bite is less dangerous on an extremity and in tissues where absorption is poor. Bites near vital organs are more dangerous. Intravenous envenomation may result in sudden death.[5] The degree of penetration may vary with the amount of clothing worn, the motion of the victim, and the condition of the snake's fangs. Even the heaviest protective boots and shoes do not always prevent envenomation. Generally, the larger snakes are more dangerous because they are capable of injecting greater quantities of venom. Snakes are likely to carry pathogenic micro-organisms in their mouths, most commonly the clostridial organisms of tetanus and gas gangrene. The initial emergency first aid can alter the outcome of a snake bite. If possible, the snake should be accurately identified. Bites from nonpoisonous snakes usually produce superficial scratches, and far less drastic therapeutic measures are required.

The venoms of poisonous snakes consist of complex proteins, enzymatic in nature. They vary in potency from species to species and within a single species, depending on the habits and physical condition of the snake. The amount injected may be from a few drops to 2 ml. per strike. The larger rattlers may inject up to 500 mg. of solids in a single ejection, the water moccasin up to 200 mg.[2] Most venoms contain hyaluronidase, which enhances the rapid spread of venom via the superficial lymphatics.[6] The deeper lymphatics become involved proximally, i. e., at the knee, groin, and axilla. Virtually none of the venom is disseminated via the blood.

The toxic parts of all snake venoms fall into three main categories: proteases, phosphatidases, and neurotoxins.[2] The proteases produce destructive effects at the bite site and play a role in remote visceral hemorrhage. The venom of some snakes (e. g., most rattlesnakes) acts as thrombin, converting fibrinogen to fibrin in the absence of other clotting factors. Others (e. g., Vipera russelli) have thromboplastic activity and convert prothrombin to thrombin.[5] There is damage to vascular endothelium, and fibrinolysis is also frequently seen.[7] The phosphatidases are reponsible for hemolysis. They also alter excitability and conduction in skeletal, smooth, and cardiac muscle. Lysolecithin is formed from lecithin, and this enhances hemolysis and produces hypotension via the release of histamine. Small blood vessels may be destroyed by these enzymes, and capillary permeability is altered. The neurotoxins of coral snakes and cobras may produce a curare-like effect at the myoneural junction, interfere with nerve trunk conduction, or act directly on the central nervous system. Death from neurotoxins frequently is the result of bulbar paralysis.

Coral snake and cobra venoms are chiefly neurotoxic, unlike the rattlesnake venoms which contain little neurotoxin, though there are exceptions. All venoms hemolyze blood, but red blood cell lysis is rarely complete, even with high titer venoms. There tends to be an inverse relationship between lethal toxicity and the ability to produce local necrosis.[8] The hyaluronidase of venoms is not of itself toxic. It is antigenic, however, and specific antiserum inactivates it.[8]

Treatment

The treatment of snake bite is more effective the earlier it is started. Since most bites occur in areas remote from a physician's office, the victim himself must usually apply the first aid. If he can remain calm, he will not only work more efficiently but will reduce the speed of systemic spread.

The first step, application of a tourniquet, has been an acceptable procedure for many years. However, recent investigations have cast doubt on the efficacy of this maneuver. The objective was to occlude the superficial lymphatics so as to lessen systemic diffusion of venom. It is thought by some that occlusive bands intensify local tissue destruction without preventing spread of the toxins.[9] Incision and suction at the bite site is another time-honored procedure no longer utilized by some physicians with extensive snake bite experience. On the other hand, Jackson and Harrison[10] offered rather convincing evidence that early suction results in removal of large quantities of venom. If this method is used, incisions need be made only to the depth of the subcutaneous tissues and suction begun by mouth, suction bulb, or whatever else is available.[11] The venom is harmless when taken orally unless there is a break in the mucosa. As swelling extends beyond the site of envenomation, short linear incisions may be made at the edge of advancing swelling and suction applied over the incisions. If the bite is on a limb, a series of incisions may be made to encircle the limb. If a tourniquet is used, it should be moved proximally in advance of the swelling and applied lightly enough that arterial blood flow is not compromised.

While extensive local excision has been advocated,[12] in most cases this would seem unnecessary unless obvious necrosis or severe infection is present. The use of ice packs and other cooling measures has met with some favor. This appears

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to lessen necrosis, to slow absorption of venom, and to prevent extensive tissue loss.[13] However, it is not universally accepted as a method of treatment.[14]

Unquestionably, snake bite victims often survive without the use of antivenin.[15] Deferring its use, however, presupposes considerable knowledge and experience in snake bite, which most physicians do not have. Hence, if there is any reason to believe that the bite may be serious, antivenin should be used, after first taking the precautions routinely advised before administering any horse serum preparation. The antiserum commercially prepared as antivenin (Crotalidae) polyvalent (North and South American anti-snake-bite serum) contains effective titers against all poisonous American snakes except the coral snake. The dried serum is supplied in a kit containing 10 cc. of sterile water for reconstitution and a disposable syringe that can be used as an aspirating apparatus after the serum has been injected. If kept in the dry state, the serum is stable for at least five years without refrigeration.[16]

The amount of antivenin to be given must vary. A smaller person requires a larger dose because the venom, distributed in a smaller volume, is less dilute. If the patient is seen within two hours of his accident, he should receive half the initial dose in the vicinity of the bite and the other half intramuscularly or subcutaneously in the affected part. A total of one to five vials (10 cc. each) may be used as a first dose. If swelling and necrosis persist and advance, more antivenin may be given every one-half to two hours until the process is arrested. A comatose patient or one in shock may require intravenous administration of antiserum. The possibilities of serious allergic reactions to the horse serum cannot be too strongly emphasized, and these must be anticipated if the treatment is not to be worse than the disease.

Snake bite is always a medical emergency, and every victim should be hospitalized. Blood typing and crossmatching should be done as soon as possible, because toxins from the snake bite may later render this impossible. Frequent blood cell counts and urinalyses are required for early detection of hemorrhage and hemolysis. The possibility of visceral or cerebral hemorrhage must be kept in mind. It may be possible to uncover a coagulation defect that would respond to specific therapy. Afibrinogenemia, if attended by massive bleeding, may require infusions of fibrinogen to control the bleeding. Most victims will be unable to take fluids orally because of vomiting. Intravenous infusions of dextrose and saline solution should be started to maintain hydration. In the event of severe hypotension or shock the patient should be given transfusion with whole blood and vasopressor agents used as indicated. Calcium gluconate may be given in the infusion to counteract unpleasant muscular twitching. Antibiotics probably should be used regularly because of the threat of infection. The routine use of tetanus and gas gangrene antitoxins has also been advocated. Antihistaminics may be useful in counteracting the effects of the histamine that is released by some venoms. Generally, the patient is thought to be out of danger if he survives the first 48 hours. Relapses occur rarely and are often due to infection or gangrene. Amputation may occasionally be lifesaving if tissue necrosis is extreme. In any case, careful, prolonged follow-up study is necessary.

Summary

In a case of rattlesnake bite with survival, afibrinogenemia occurred as a result of the thrombin-like action of the venom. Gastrointestinal bleeding and serum sickness also developed.

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Louis Spitz, M.D., and Mr. Roger Conant (Curator of Reptiles, Philadelphia Zoological Garden) assisted in this study.

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The lyophilized venom used in the coagulation experiments was supplied by Mrs. Eleanor Buckley, Wyeth Laboratories, Inc., Philadelphia.

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MEDICAL CARE UNDER THE HEALTH INSURANCE PLAN OF GREATER NEW YORK

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House, office, and in-hospital care under the Health Insurance Plan is provided to 550,000 persons by physicians who work almost exclusively in groups. The 32 groups operate medical centers in which more than 10 million dollars have been invested. Qualifications of group physicians are determined by a medical control board, and professional education programs for group members are provided. The quality of surgical, medical, obstetric-gynecologic, pediatric, laboratory, and x-ray services has been thoroughly evaluated, and the other departments are currently under review by specialists outside of the plan. Each medical group receives equal annual capitation for each insured person selecting that group, and each group operates its own plan of paying its distributable income to physician members. The accumulation of experience is enabling the organization to move steadily in the direction of comprehensive medical care of high quality.

Innumerable inquiries have come to the Health Insurance Plan of Greater New York (H. I. P.) from practicing physicians, medical students, health insurance organizations, medical societies, labor unions, and others asking about the plan. This paper has been prepared to help answer some of the often-raised questions.

The Health Insurance Plan of Greater New York, because it provides medical care and not cash indemnities, is obligated to establish professional standards and to organize its activities so that subscribers will be assured a high quality of medical care. The following standards and methods are among those set by the H. I. P. and developed by it to achieve this quality.

Group Practice

Home, office, and in-hospital medical care in the H. I. P. is provided to 550,000 persons by physicians who work in groups (except for 1.7% of the enrollees who live outside of the areas in the seven counties served by the 32 medical groups). Group practice has been defined by the H. I. P. as "provision of preventive, diagnostic, and curative medical services by family physicians, specialists, and other professional and technical staff working as a team in a group center, pooling their knowledge, experience, and equipment, as well as income." The scope of medical care provided by the H. I. P. is shown in the table.

The founders of the H. I. P. believed that the close professional association of physicians in group practice at adequate medical centers would inevitably result in better medical care than could be provided by physicians working alone. One of the major reasons physicians become associated with medical groups in the United States, they say, is that they believe it will enable them to practice better medicine.

All group physicians must meet the professional standards established by the H. I. P. medical control board, as will be discussed later. Each family physician in a group has readily available to him, and without additional cost to his patients, the serv-

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ices of specialists in all of the clinical fields (medicine, pediatrics, surgery, obstetrics-gynecology, orthopedics, ophthalmology, otolaryngology, dermatology, urology, neurology, radiology, pathology, and psychiatry), as well as in the laboratory, x-ray, and physical therapy departments. (Each medical group has a psychiatrist who provides psychiatric diagnosis and consultation. The H. I. P. coverage does not provide for psychiatric treatment by psychiatrists.) The 32 medical groups have over 1,000 physicians; approximately one-half are family physicians and the other half specialists. Most of the group physicians (80%) are partners. The new group physicians start under contracts. Each medical group elects its own medical director and establishes appropriate committees. Each clinical department has a chief responsible for supervision and administration of his department in the group. Professional work schedules are arranged in almost all of the groups, or between groups, for emergency night and week-end calls and vacations in order to enable all participating physicians to have free time for rest, research, and study.

Since each subscriber has his choice of any medical group serving his community and then, within the group chosen, makes a choice of a family physician, there is healthy competition among groups to provide the best possible medical care. Each medical group has learned that its economic future depends on how satisfied its own subscriber-patients are, for subscribers are soon aware of inadequacies in physician attitude or administrative procedure.

Scope of Medical Services Provided by Health Insurance Plan of Greater New York

Services Provided Under H. I. P. Contracts

- General medical, specialist, surgical, and obstetric care
- Laboratory and diagnostic procedures
- Periodic health examinations, immunizations, and other measures for prevention and detection of disease
- Physical therapy, radiotherapy, and other therapeutic measures
- Professional services for the administration of blood or plasma
- Eye refractions
- Visiting nurse service at the insured person's residence as prescribed by a physician of the group
- Ambulance service from the insured person's residence or, in an emergency, from other locations within the area served by the group to a hospital when ordered by a physician of the group

Services Not Provided Under H. I. P. Contracts

- Medical services for acute alcoholism; drug addiction; tuberculosis, during the period that the insured person is confined as a patient in a sanatorium or special hospital or if recommendation for such confinement has been made by a licensed physician and facilities for such confinement are available but have been rejected by the insured person; psychiatric disorders, after diagnosis, for which care is customarily provided by a psychiatrist; chronic illnesses in an institution other than a hospital for general care; artificial insemination; and anesthesia if administered in a hospital or if administered by an approved anesthesiologist in a medical group center
- Cosmetic surgery, except procedures needed for the treatment of congenital anomalies so as to restore a part of the body to its proper function and procedures to correct a serious disfigurement or serious deformity caused by a disease or injury treated during the patient's coverage under the H. I. P.
- Electrolysis for epilation
- Services for dentistry or dental surgery
- Prescribed drugs and biologicals used for prevention or treatment of disease, prosthetic appliances, eye glasses, blood, plasma, and other substances ordinarily provided by donors
- Special duty or private nursing service

Utilization of Services by Insured Persons (1957)

- 75% of all enrollees receive medical service during a year; average number of medical services received by all enrollees per year is 5.36, with a high of 15.5 services per year for children under 1 year of age and a low of 3.7 services per year for those between the ages of 15 and 20; 80% of all medical services are provided in physicians' offices, 9% in patients' homes, and 11.3% in hospitals
- Breakdown of number of physicians' services per 100 enrollees per year, as provided by type of physician:

Family physicians and internists	268
Pediatricians	60
Radiologists	44
Obstetricians-gynecologists	42
General surgeons	27
Allergists	21
Ophthalmologists	19
Orthopedists	16
Otolaryngologists	14
Dermatologists	14
Urologists	8
Other	4

Ages of enrollees

- 28.4% under 15 years
- 15.5% over 55 years

Cost

- The premiums for group enrollment are $42.72 per year for one person, $85.44 for a man and wife, and $128.16 for a family with children. These rates are 21% higher if the income of an individual subscriber is over $6,000 per year or if family income is over $7,500 per year. (All subscribers must also carry hospital insurance at the time of enrollment.)
- The average premium income per insured individual is approximately $36 per year, varying each year in relation to the number of children in families since the premium is the same for a family with one or with several children and varying with the percentage of enrollees in the upper income rate.
- Under New York State law, 4% of the premium income is placed in legal reserves until a reserve of 25% of premium income is reached. Of all premium, 88% is paid to the medical groups. The remainder covers the H. I. P.'s costs of maintaining its medical department, research, statistics, and general administration.

The Medical Group Centers

The 32 medical groups affiliated with the H. I. P. have invested over 10 million dollars in medical centers. Each medical group is required to have a

center with the following facilities: 1. Sufficient consulting and examining rooms to provide all ambulatory specialty services without delay in appointments. Because of the large geographical areas now covered by most of the medical groups, many family physicians and pediatricians also provide services in offices nearer the homes of their subscriber-patients. However, these physicians also have scheduled hours set aside each week for appointments at the center. 2. A fully equipped clinical laboratory with trained technicians under the supervision of an approved pathologist. 3. An x-ray department with trained technicians under the supervision of an approved roentgenologist. 4. A physical therapy department with at least one licensed physical therapist and equipment for the usually accepted modalities of treatment. 5. Equipment for electrocardiography, basal metabolic rate determination, and similar procedures. 6. Uniform medical record systems.

It is our experience that, whenever physicians are brought together to work in one center and share modern equipment and facilities, the ease of consultation and the stimulation of professional contact bring about the desire and effort to achieve and maintain high levels of performance.

Qualifications of Physicians and the Medical Control Board

Prior to participation in the work of the medical groups, all physicians have their training and experience reviewed and approved by an impartial medical control board composed of 18 leading physicians, the majority of whom are not affiliated with the medical groups. The contracts between the Health Insurance Plan and the 32 medical groups require that the groups and their physicians abide by the policies and regulations adopted by the medical control board.

Examples of standards of training and experience adopted by the medical control board are as follows: (1) for chiefs and associate chiefs of all of the 12 basic specialties, certification by the American board in the respective specialty and appointment as attending, associate, or assistant attending physician on the staff of a hospital approved by the American Medical Association for resident training in the specialty; (2) for assistants in each specialty, completion of training required by the respective American boards; (3) for family physicians (several of the medical groups employ as family physicians only diplomates of the American Board of Internal Medicine or physicians who have completed the training required by this board), graduation from a medical school approved at the time of graduation by the American Medical Association, an internship for a period of at least one year in a hospital approved for internship by the American Medical Association, a residency or fellowship in internal medicine for a period of at least two years in a hospital approved by the American Medical Association for residency or fellowship in internal medicine (adopted June, 1957) or a staff appointment in medicine for the five years preceding the date of consideration of the candidate by the medical control board in a voluntary or municipal hospital approved for residency training in internal medicine by the American Medical Association (adopted June, 1957), and appointment in medicine on the staff of a voluntary or municipal hospital approved for residency training in internal medicine by the American Medical Association, personal interview by members of the medical control board regarding training and experience, and a written test in clinical medicine prepared by a national testing organization skilled in this field; and (4) for consultants in specialized fields of surgery (approximately 80) serving all medical groups (cardiac, plastic, brain, thoracic, head and neck, pediatric, stapes, fenestration, and others), certification by the American Board of Surgery, appointment as attending or associate attending physician in the specialized field in a hospital having the personnel and equipment necessary for the proper performance of operations, and demonstrated proficiency in the specific specialized field.

The medical control board requires a base-line history and physical examination for each new adult enrollee as soon as feasible after joining the medical group of his choice. It has established requirements that maternity care be provided by obstetricians and that pediatric care, at least for children under the age of 3, be provided by pediatricians. Some of the medical groups provide care by pediatricians to the age of 6 and some to the age of 12 years.

Professional Educational Programs

Each of the medical groups has monthly clinical staff meetings to discuss case reports, morbidity, and mortality and to review clinical subjects selected primarily by the family physicians. The H. I. P. has an educational fund used to defray one-half of the cost of tuition for postgraduate courses taken by the physicians. A foundation has made available to the H. I. P. funds to pay research fellowships for selected young physicians becoming affiliated with the medical groups.

A consultant specialist in physical medicine is available to the medical groups to discuss regularly how the skills of this relatively new medical specialty can assist in the care of patients requiring rehabilitation. Two consultant dietician-nutritionists have been employed by the H. I. P. to work with the medical groups in developing group therapy for obese, diabetic, or other types of patients in need of special diet discussions and to develop the type of diet instructions most suitable for the population groups served by the medical groups. A maternity nurse-teacher has been employed by the H. I. P.

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(with the aid of a grant from the U. S. Children's Bureau) to develop classes for expectant parents in cooperation with the obstetrician-gynecologists in each medical group. A specialist in medical records is employed by the H. I. P. for consultation with the medical groups and individual physicians on all aspects of maintaining acceptable records and for the development of systematized follow-up studies of all patients with serious or potentially serious illnesses who fail to return for needed medical care.

A staff of five full-time consultants in community resources (skilled social workers thoroughly familiar with more than 2,000 voluntary and public agencies related to health and welfare in New York City) are employed by the H. I. P. to assist the subscribers and physicians in dealing with the difficult problems of obtaining appropriate convalescent home care, household aid, admission to mental institutions, appliances for the handicapped, vocational rehabilitation, and other services.

A staff of six full-time, professional health educators is employed by the H. I. P. to assist the physicians individually and in medical groups to discharge their roles as teachers of sound health information and attitudes and as counselors of wise health practice during illness and health. The health educators guide the development of a wide variety of educational activities, all with the sponsorship and participation of the physicians, including periodic bulletins, a variety of subscriber-physician meetings, pamphlets, films, and intimate discussion groups.

Method of Payment for Medical Care and Subscriber Relations

Method of Payment for Medical Care.—The fee-for-service method of payment is not used in group practice under the H. I. P. Instead, each of the 32 medical groups at present is paid $31.80 per year for each person enrolled in a group (this includes $1.20 per enrollee for a pension fund for group physicians). For this capitation the medical groups agree to provide all medical care covered by the contract and needed by their enrollees. After each group has paid its overhead and administrative costs, the income remaining is distributed to physicians on the basis of such factors as number of hours spent in the work of the group, number of years of postgraduate training, and length of time served in the group. Each medical group has its own formula for disbursing its distributable income to its physicians. The security of an assured income and retirement program, the relief from discussing fees and from sending and collecting medical bills, and the knowledge that costs will not deter patient cooperation permit the H. I. P. physicians to be primarily concerned with the provision of good medical care.

Participating physicians are not permitted to make extra charges to or accept payments from or on behalf of the H. I. P. patients for services covered under the H. I. P. contracts, irrespective of the family's income or of the type of services provided, except that they may charge $2 for a home call requested and made after 10 p. m. and before 7 a. m.

Subscriber Relations.—When persons enroll in the H. I. P., every effort is made to acquaint them fully with the services available and how to use them to maximum advantage. They are encouraged to discuss any dissatisfaction with medical services or administration with their medical group directors and to offer suggestions for improvement of the plan. Complaints and suggestions for improvement are discussed by the medical group directors with all of their physicians and staff at monthly meetings.

The H. I. P. maintains a subscriber service division at its central office where written and telephoned inquiries, complaints, or claims from persons and expressions of praise and appreciation are received. Complaints are given careful individual attention and are discussed by the H. I. P. medical staff with the appropriate medical group directors. Copies of all complaints received by the H. I. P. are sent to the appropriate medical groups, and written replies are required. The medical administrative staff of the H. I. P. may find it necessary to interview the persons concerned and to make recommendations for appropriate handling of the complaints. Reviews of all complaints are made by the H. I. P. and are submitted to the medical groups at regular intervals. The methodology of handling any complaint or claim promptly and fairly has minimized malpractice claims.

With the guidance of the H. I. P.'s health education staff, medical groups sponsor quarterly bulletins which are mailed to subscribers and hold periodic night meetings with their subscribers for the purpose of discussing problems related to health and medical group care of interest to subscribers.

These bulletins and meetings, in addition to dealing with such subjects as infant care, mental health, health problems of elderly people, nutrition, and literally many dozens of other health areas, have also dealt with such matters as how a medical group functions, appointment systems, laboratory and other diagnostic procedures, doctor-patient relations, and a wide variety of administrative matters. Several medical groups have developed advisory subscriber committees.

In all instances the fundamental aim is to bring the physicians in a group and its subscribers closer together. The medical director and his administrative staff are involved in the preparation of the bulletin and are always present to lead the discussion and to answer questions at subscriber meetings. Many physicians were at first apprehensive

about meeting with large numbers of subscribers, fearful that they would be overwhelmed by unwarranted and intemperate criticism. The results have been quite the contrary.

Complaints are solicited and aired at these meetings, as they are in the bulletins. Many valuable suggestions for facilitating the work of the group in the interest of subscribers have been made at these meetings to the advantage of all concerned. The group directors take immediate steps to bring about any necessary changes and thus avoid future complaints.

The group physicians have learned that properly conducted meetings and carefully written bulletins provide an excellent opportunity to discuss with their subscribers many practical and difficult problems in the provision of good medical care. For the subscribers a feeling of sharing with their physicians in the success of their medical group has been achieved.

The methods described permit all subscribers to have a direct part in influencing the quality of medical care. A favorable attitude of subscribers toward their medical groups or toward their individual physicians is essential for the success of any medical group, for dissatisfied subscribers may readily transfer to another medical group or to another physician within a group.

Studies of the Quality of Medical Care

During the past three years, the H. I. P., with the cooperation of the medical groups, has thoroughly evaluated the quality of surgical, medical, obstetric-gynecologic, pediatric, laboratory, and x-ray services provided in each of the 32 medical groups.[1] This study was made by professional leaders in each specialty field who were not otherwise affiliated with the H. I. P. For each physician studied, the H. I. P. selected a sufficient number of clinical records to evaluate fully the competence of the person. Any physician whose score was unsatisfactory and who remained in the medical group at the conclusion of the study was given individualized educational guidance by his medical group and was repeatedly restudied until his work was satisfactory or he resigned from his medical group. (It was interesting to note, in the pediatric portion of the study, that 95% of all the H. I. P.-insured infants were immunized against whooping cough, diphtheria, tetanus, and smallpox in their first year of life.) As the study of each medical group was concluded, the medical care study team met with the group physicians to discuss fully all of the findings and recommendations for each department and each physician. The departments of orthopedics, urology, allergy, ophthalmology, and otolaryngology are now being evaluated by a new medical care study team.

A recent study by the New York City Health Department and the H. I. P. of the perinatal mortality in New York City showed that the rate for the H. I. P. enrollees (expressed per 1,000 live births and fetal deaths) was 21.3 as compared with 30.1 for all private patients in New York City.[2] Continuing studies are being made for two additional years, including coding in all cases the training and experience of the attending physicians. It is believed that these further studies will show that the difference in the rates is related primarily to the fact that in the H. I. P. only specialists provide maternity care and pediatric care of newborn infants. Other studies are being made of the stage of development of cancer when first diagnosed in the medical groups and the relationship between morbidity in the pregnant woman and the outcome of pregnancy.

Recently a report by the H. I. P. on prepaid medical care and hospital utilization was published by the American Hospital Association.[3] The hospitalization experience of two populations having the same hospital insurance coverage, but different coverage for medical care, was compared in the study. The two populations were those of the H. I. P. and United Medical Service (Blue Shield) in New York City. It was found that the annual hospital admission rate for the H. I. P. population was 77.4 per 1,000 as compared to 94.8 for the Blue Shield group. It was also found that the duration of stay, expressed as the number of days per 100 population per year, was 53.8 days for the H. I. P. and 68.8 for Blue Shield group. There was little difference in the average duration of stay per admission.

The various administrative measures described here reflect a strong desire to provide care of high quality. Of course, the H. I. P. has not met with complete success in its efforts, and some administrative obstacles have arisen. However, the organization has profited, and continues to profit, from its experiences and year by year is moving closer to the complete fulfillment of its goal—the provision of comprehensive medical care of high quality through full-time medical groups with modern medical facilities.

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A SMALL COMMUNITY HOSPITAL HANDLES A DISASTER

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Several basic factors appear important in planning a program for handling of mass disaster victims by a small community hospital. The first 24-hour treatment program must be outlined in detail. Team approach is the only logical one, with provision for alternate chiefs. Frequent practice sessions are necessary, and stockpiles of dressings, drugs, aged plasma, and electrolytes must be kept available. In any sizable disaster, the exposed method is the only way to handle burn cases. Identification tags for school children appear desirable. Police should have information about available hospitals in given areas and their casualty capacity. The hospital involved in the situation reported here, a school fire, has 350 beds.

On the afternoon of Dec. 1, 1958, fire broke out in Our Lady of Angels' school in Chicago. Within 15 minutes patients began to arrive at St. Anne's Hospital in Chicago. This is a small community hospital with 350 beds. The way in which St. Anne's Hospital handled this emergency situation is outlined below, demonstrating what can be done if everything and everybody is ready.

The Plan

The disaster plan at St. Anne's Hospital has been under consideration for the past eight years and, in that time, has undergone many changes until it has arrived at its present form. The plan as it has been worked out is voluminous, since it presumes many degrees of disaster from a few assorted victims to the thousands resulting from a nuclear explosion. Its success, in any degree of disaster, depends on many factors, not the least of which is a clear understanding by all concerned of their duties, an adequate stock of supplies ready to be used at a moment's notice, an acceptance by the members of the medical staff of the team plan of treatment, and the presence, in the receiving pavilion, of a man or men capable of rapidly evaluating the nature of the injuries. He must have knowledge of the medical talent available so that the patients may be assigned to the proper departments for immediate emergency care and definitive treatment.

In the long run the plan calls for frequent staff meetings, usually, as in this case, on a daily basis, to bring everyone up to date as to the situation as of that moment, to suggest changes in routine treatment, and to advise the team as to the available supplies. Reports are received from the members of the team and suggestions from the men are solicited and evaluated. Then the plan for treatment for the next 24 hours is outlined.

In other words, until all of the patients are out of danger, care is kept on a 24-hour basis under the immediate and tight control of a team of physicians designated by the staff at the time of the first meeting. The team includes those best suited, in the opinion of the assembled staff, to care for the injured patients, the decision being based on the character of injuries sustained. The meetings must, at all times, be under strict control of the head of the disaster team and/or his designated representatives.

How It Worked

The plan worked in this particular disaster as follows: The emergency room staff notified the administrator of the hospital of the state of disaster, and the administrator called the chairman of the disaster plan, the director of nursing, the director of household activities, the director of nonprofessional personnel, and the switchboard operator (to notify physicians and summon them to the hospital).

The chairman of the disaster plan responded immediately and was informed by the administrator of what appeared to be the extent of the disaster. He assigned men to duties as they reported to the hospital. Cases were noted and provision was made for physicians to care for the following groups: ambulant patients (with instructions to discharge them to their homes if possible), those with minor injuries, those with serious injuries requiring hospital care but no immediate operation, and those requiring immediate surgical care. The chairman of the team and men designated by him evaluated the patients as they were admitted and directed that they be taken to the previously designated centers, depending on the character of the case, as noted above. Centers would vary according to the size and character of the disaster and available facilities.

As soon as all of the patients were evaluated and disposed of, the chairman proceeded to conduct rounds of all the various treatment centers to see that all was going well and to offer suggestions where indicated. These rounds were repeated time after time until all of the patients were put to bed and therapy started. The chairman then called a meeting of the men present to receive reports and outline the first 24 hours of care according to the problems at hand and to designate the team to be responsible for carrying out such care.

Director of Disaster Plan, St. Anne's Hospital.

The director of nurses mobilized all nursing personnel and put in a call for volunteers and off-duty personnel. She assigned nurses, according to the plan, to the emergency room, emergency wards, surgical services, and the various floors; the duty in the latter was to make rooms ready to receive patients as soon as they received appropriate emergency treatment. This was done under the direction of physicians previously so designated and assigned.

The housekeeper set up tables of supplies in operating rooms, in the emergency receiving pavilion, and in the various treatment centers as planned. These supplies, at this hospital, are on hand to care for at least 50 patients, with more available for use in a relatively short time. The pharmacy prepared a list of the drugs available and consulted with the chairman of the disaster committee to determine whether any additional amounts of such drugs or other drugs would be needed. A report as to the available supplies of colloids, including whole blood, was given to the disaster chief, who estimated the amount that would be needed for the first 24 hours. Supplies of electrolytes were checked to assure sufficient quantities for the first 24 hours.

The director of nonprofessional personnel dispatched persons to attend the entrances to the hospital and direct visitors to the proper areas, families of possible injured being referred to a lounge previously designated as the relatives' lounge, where they were registered for identification. He personally communicated to the families the periodic reports as to the identity of injured persons in the hospital as soon as it was possible. All telephone inquiries were directed to a person so designated, and members of the press were directed to the director of public relations. Periodic lists of families and patients were made up by the medical staff secretary, and communication with other hospitals was maintained to locate relatives. The administrator of the hospital coordinated all of these activities and enforced decisions of the disaster team.

How Patients Were Handled

Physicians, including the disaster chief, began to arrive within 15 minutes after the arrival of the first patient, and within 40 minutes 80% of the staff was present and assigned to treatment centers. The receiving pavilion was empty within one hour and 15 minutes, except for six patients who were dead on arrival and had been placed in a previously designated room and four other patients apparently beyond medical help who died soon after their arrival.

Within two and one-half hours all 46 patients were in bed and given care for their burns. Administration of fluids had been started, sedatives, tetanus antitoxins, and toxoid given, Foley catheters inserted, and, in most cases, definitive care instituted. There were, in addition to the burns, a multiple list of other injuries, and definitive care given immediately included two tracheotomies, a screw in the olecranon process for skeletal traction to a supracondylar fracture of the humerus, a Steinmann pin in the os calcis for a fracture of the femur, five moulded plaster splints for fractures of the os calcis, manipulation, reduction, and casting of three Colles' fractures, manipulation and reduction of one fractured tibia and cast, and the application of Crutchfield tongs for traction on a dislocated cervical spine. Other injuries included basal skull fractures (at least two patients), compression of the lower dorsal and lumbar regions of the spine, fracture of the pelvis (six), fracture of facial bone (two), fracture of the spinous process of the vertebral bodies (one), fractures about the ankle (four), fracture of neck of the humerus, and tension pneumothorax for which water seal drainage was started. A Bennett positive-pressure machine was used in two cases.

At the first meeting, held at 8 p. m., the over-all management of the patients was assigned to two pediatricians and one internist. The care of the children's burns, in the initial stage, was assigned to the orthopedic department, and at their suggestion the exposure treatment was decided on for all patients. These decisions were approved by the members of the medical staff present. At the initial meeting it was suggested that Stryker frames be secured, and within 16 hours these were being used in 14 cases. Shock was treated with dextran, plasma, and whole blood and also isotonic sodium chloride solution and lactated Ringer's solution, replacement being made on the basis and the character of the loss; for instance, replacing blood with blood according to the Brooke formula. Chlorothiazide (Diuril) and lyophilized urea were given where indicated. Antibiotics were given immediately, penicillin-dihydrostreptomycin (Combiotic) the first 24 hours and then specific antibiotics as indicated by sensitivity tests. Large quantities of bacitracin and polymyxin-B, and also ristocetin (Spontin), were used with no complications.

The burns themselves were second-degree and third-degree in most cases. The extent of burns was 60% or more in six children, with 90% in one and 80% in one. The rest were burned for varying degrees up to 40%, and four had third-degree burns of the face, including the eyelids, hair, and scalp. Six others had involvements of the ear but not the eyes. Eschars were formed in the first 48 hours. Débridement and skin grafting were first started on the 15th day after patients were admitted. Of the 46 patients admitted, one died early in the second week of a basal skull fracture and septicemia. A second died in the third week of overwhelming bacteremia. In the latter patient, at autopsy all of the vital organs were found to be riddled with abscesses. In those few patients in whom urinary output was

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temporarily interrupted it was resumed within 12 hours with no further difficulties. Ten of the patients developed bacteremia but recovered satisfactorily, except for the two as noted. The remainder of the patients progressed satisfactorily, and all but 10 of the remaining 44 had been discharged from the hospital by the end of the fourth week.

The skin grafting was under the direction of the surgical department, and autografts were used where available but, in at least three of the patients, lyophilized homografts supplied by the Department of the Navy were used as temporary dressings. At the débridement and skin grafting stage, an aerosol spray containing a 1% solution of neomycin and bacitracin was used with excellent resuts.

What Went Wrong.—Identity was often incomplete, and even parents were unable to identify for sure some of the more severely burned children. A system of multiple tagging on admission would benefit those concerned with seeking victims and reuniting them with relatives. Physicians and other personnel, including volunteers, had difficulty getting to the hospital because of the crush of automobile and pedestrian traffic. Adjustment to the team approach was difficult at first but was made satisfactorily.

Comment

This plan worked at this hospital but would, of course, have to be adjusted to meet the needs of each individual hospital. Several points appear now in the light of this experience to be most important in planning any kind of program for handling mass disaster victims:

First, the plan must be simple. Obviously, as the plan becomes more complicated the degree to which physicians, nurses, and nonprofessional personnel can be familiarized with its workings decreases proportionately.

Second, mass disaster situations must be postulated and the first 24 hours' treatment for the commonly expected problems, such as burns and fractures, must be outlined in detail. When the disaster occurs it is too late to plan for treatment.

Third, it is apparent that the team approach is the only logical one if chaos is to be prevented, and the team must be under the direction of one man, the disaster chief, who is thoroughly familiar with his job. Alternate chiefs should be trained in the event the disaster chief is not available.

Fourth, frequent practice sessions are necessary in order to familiarize all personnel with their part in the plan. These frequent trial runs are also important since, particularly these days, nonprofessional help varies from week to week.

Fifth, stockpiles, based on the outlined 24 hours' treatment, must be kept available. This applies not only to dressings and drugs but also to aged plasma and electrolytes. A readily available source of whole blood should be provided at all times.

Sixth, when the majority of the cases are burns, the exposure method of treatment appears to be the best and, in any sizable disaster, is the only way to handle burn cases. It requires much less stockpiling than the less-satisfactory, closed pressure method.

Seventh, the problems of identification among children, since they so infrequently carry wallets or other identification, make the idea of identification tags for school children a desirable thing.

Eighth, in planning for a disaster, it would be well if the personnel of each police district were familiar with the hospitals in their district and had on record an estimate of the number of casualties each could care for at one time.

The most significant conclusion to be drawn from this experience is that a small community hospital, properly prepared and aware of the problems involved, can handle a mass disaster.

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TOWARD A SAFER HOLIDAY.—During the first 30 years of this century more people were killed and injured celebrating the nation's independence than in the War of Independence itself. Fireworks killed 4,290 persons and severely injured 120,000, as compared to the Revolutionary War of 4,044 dead and 6,600 wounded. . . . Right across the country there is a pattern of illegal sale of fireworks. . . .

The biggest operators, of course, are professional bootleggers. In 1956 the Bergen County, N. J. police were reported to have said that illicit trade in firecrackers, Roman candles, skyrockets, cherry bombs and other dangerous fireworks had reached the highest level since 1937, when the New Jersey control law went into effect. . . . Several states have no control laws, and bootlegging is still a serious problem. . . . When the laggard states join their sisters in passing the model control law, and when interested citizens in all states remain alert to the many dangers still inherent in our manner of celebrating our national birthday, it will deserve its rather premature title of "glorious."—Helen Augur, Gaps in Fireworks Control, *The Sight-Saving Review*, Spring, 1959.

MEDICAL RESPONSIBILITIES IN A CHANGING WORLD

Gunnar Gundersen, M.D., LaCrosse, Wis.

I do not have to prove to this group that this is a changing world. Nor do I have to demonstrate that medicine is also changing. Nevertheless, I want to outline briefly three important areas of change in America that are affecting, and will affect, medicine profoundly.

Population, Social, and Scientific Changes

At the 34th Annual Congress on Medical Education and Licensure last year, we learned from Dr. Dudley Kirk and the workshop session that the United States currently is undergoing the largest absolute increases in population in its entire history. Approximately 3 million persons are being added annually, and in 20 years we may expect to have a national population of 240 million.

In addition to pure numbers, our population also is being redistributed. The suburbs are continually outgrowing their boundaries, and now the flight is to exurbia, or to the more open spaces.

The age of our population is changing too. Today the nation grows younger and older at the same time. Present baby booms are keeping the population young, while the increasing numbers and proportions of older citizens advance the age of the population.

Within this growing population certain other social and economic changes are taking place. As Dr. Kirk pointed out, there is "a consistent trend toward upgrading the standard of living, the occupational class and the educational standards of our people."

Perhaps these three—income, occupation, and education—are in reverse order, for we know that, as education builds up the capacities through learning, the number of skilled and clerical workers and managerial and professional persons increases. These new positions then generally bring higher incomes.

One result of all this has been a raising of living standards. Important also is the fact that a person today is "what he can do," not "who he is" in terms of social class or ethnic, religious, or local background, as Dr. Talcott Parsons emphasized at last year's Congress.

Of course, there have been scores of other significant changes involving people: the public has become increasingly mobile, smaller families are in vogue, there is a trend toward early marriages, and there are new demands and needs for goods and services. Time does not permit me to dwell on these or any of the other meaningful social and economic changes. But I think we will agree that these changes are affecting, and will affect, medical practice.

On top of all this, the changes in medical science have been exceedingly dramatic. And the outlook is for even greater changes. As Dr. W. Barry Wood has said, today's medical scientist is probing "directly at the very secrets of life itself."

Equally as impressive as this depth of medical science is the growth in breadth. Modern medical science today encompasses all of the basic natural sciences. It involves the social sciences and the environmental factors of illness. It can truly be said that modern medicine is borrowing more each year from the sciences and humanities on all sides. Thus, we can expect that this depth and breadth in medical science will produce impressive aids for the control of disease in the decades ahead.

Having taken a quick glance at the wondrous changes in our population, social and economic matters, and medical science, how will, or should, all this affect the future of medicine and medical practice? How must we respond to these changes if we are to fulfill our obligation of providing the best possible health care to the public?

Medical Responses to Change

Here are a few effects and medical responses as I see them: First, more people, higher incomes, more health insurance, better standards of living, and higher education will increase the demand for medical service. To meet this demand we must insure the American people of an adequate supply of physicians not only in 1960 but also in 1970, 1980, and 2000.

For the past 25 years or more the output of our medical schools has kept pace with our population growth. Now, however, we cannot continue to be complacent over past or present accomplishments. We must look ahead, in the light of social, economic, and population changes, to any deficiencies, shortages, or new needs which can be anticipated in the future.

We accept the responsibilities for providing an adequate supply of physicians in the future, as we always have, and as a profession dedicated to public service we certainly have no intention of limiting the supply of physicians—even if we had such powers.

Second, the profession must insure the quality of physicians being produced. I believe that physicians should be liberally educated men and women, as well as being properly trained in medicine, so that they can fit their activities appropriately into the social and economic culture of their environment.

President, American Medical Association.

Read as the Walter Bierring Lecture before the Federation of State Medical Boards, Chicago, Feb. 9, 1959.

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Certainly, graduates must be well trained in medicine. However, because of medicine's complexity, no physician can be an expert in all of medicine; his expertness will be limited to a fraction of the vast field. This does not mean the physician should have merely a superficial knowledge of medicine outside his chosen specialty—and I include general practice under that term "specialty." Quite the contrary, all physicians should have good training in all phases of medicine. Thus, they will be able to handle an array of problems and will know where and how to get answers when they are unable to solve certain medical problems.

I also think that quality in a new physician must include a good deal of the art as well as the science of medicine. Certainly, as we are confronted with a larger and more mobile population and an increasingly complex and frustrating world, new physicians must be ready, willing, and able to assume more responsibility for the well-being of their patients. Medical science has progressed to a great degree, but the need and the demand for physician responsibility and for the discharge of this responsibility with warmth and compassion has not been eliminated and never will be.

Third, the patterns of medical practice must be modified, as necessary, to make practitioners productive and effective in meeting the needs of today and tomorrow. I believe that we can make a big start in this area by giving more responsibility to other legitimate personnel in the health field, personnel now doing much that legally is deemed medical practice. Already we are depending more and more on the techniques and skills of paramedical professional persons; at the last count there were more than 62 such groups.

We need the ideas and the assistance of these persons if medicine is to provide the best possible health care for the public. Like us, they take pride in their work of service, and I believe that our profession must respect them and emphasize the dignity of their calling. By exerting cooperative leadership with, not dictating to, these professional persons, medical practice can gain new dimensions as we seek to prevent, diagnose, and treat disease together.

I also believe that a realistic approach to the economic aspects of medical practice must be taken, recognizing the change that has taken place and trying to work out adjustments to future change. Medical men must work cooperatively with others, I think, or have others superimpose a way of medical life that may give medicine little voice. Certainly it is unwise to expend our energies fighting battles already lost. Rather, we should always contend with present and future issues.

Currently, the American Medical Association is taking several positive steps involving the economic aspects of medical practice and medical care. Two months ago in Minneapolis the House of Delegates took a major stride in helping to solve medical and socioeconomic problems arising from a rapidly expanding aged population. By unanimous action the A. M. A. House of Delegates approved a proposal calling for physicians to provide medical services at adjusted rates to persons over 65 years of age with reduced incomes and modest resources.

The proposal asked insurance companies and organizations with prepayment plans to develop new policies at special low premium rates for those over 65 years of age who are in the low income brackets. The House of Delegates also urged that the A. M. A., the constituent and component medical societies, and physicians everywhere expedite the development of this plan. This is one example of concrete, positive action taken in behalf of providing the best possible health care for the aged at a cost that senior citizens can reasonably afford.

The medical profession and various medical societies also are experimenting with advisory fee lists to guide physicians as to the propriety of their charges. In addition, these lists are providing the insurer with essential data that are basic to the design and underwriting of adequate sound insurance.

Another example of medicine's concern in this area is the work done by the A. M. A.'s Commission on Medical Care Plans. One of the important recommendations by the Commission is that "the medical profession assume a judicious, tolerant, and progressive attitude toward developments in the medical care field. The need for continued experimentation is recognized, and the profession should undertake, and actively participate in, the study and development of various mechanisms for the provision of medical care of high quality." The Commission's report represents a sincere and intelligent approach to medicine's necessary adjustment to the changing world, and I have every trust that it will be approved by the House of Delegates in June.

These are just three of the realistic approaches being taken to the economic aspects of medical care and practice. They demonstrate that the pace of American medicine's response to new problems and new challenges in the dynamic world of medical care and medical practice is accelerating.

I also believe that the profession is alert to the continuing need for the family physician not only to render continuing medical care in a definitive sense but also to see that specialists' services are used wisely. Most physicians realize that a profession composed of only "true" specialists would be wasteful of time, money, and effort and would not result in uniformly good care.

We in the profession see an increasing need for the family physician who can assume comprehensive and continuing responsibility, commensurate with his professional competence, for the patient or his family. This physician must have a special concern for the problem of the "whole patient," particularly the different "lives" he lives such as at home and on

the job. Moreover, he must coordinate specialty consultation and care according to the requirements of the particular patient.

It is medicine's responsibility to insist that all physicians are competent for the medical service they undertake. Likewise, the profession must be willing and ready to discipline its members when and where there are instances of professional incompetence, no matter whether these involve family physicians or specialists. These, then, are some of the responses that the medical profession as a whole must make in fulfilling its responsibilities in this changing world.

Specific Responsibilities

As a federation, I believe that you have certain specific responsibilities in helping the profession provide the best possible health care for the American people. Let me enumerate a few of these. Because one of the major characteristcs of population change is real and increasing mobility, physician movement must be encouraged if the needs of a shifting populace are to be served. Therefore, there is a need for the extension of a uniform policy of endorsement or reciprocity of medical licenses. Also, with high standards of clinical clerkships being attained by most medical schools, it seems inevitable that the future of the internship—as now known—is questionable. However, there also is general agreement that one year of hospital experience beyond medical school is not adequate preparation for medical practice of either a general or a specialty nature.

Therefore, I believe that state boards should begin to consider modifying their requirements. Laws, rules, and regulations should allow freedom for sound experimentation in the medical school curriculum. I believe that the natural result would be an expression of confidence in our medical school faculties, and this could best be reflected by requiring only that students be graduates of approved medical schools in the United States or Canada. (The program of the Education Council for Foreign Medical Graduates promises an equitable approach to graduates of other countries coming to the United States.)

The boards should also explore with medical educators and others the feasibility and desirability of requiring a minimum of two years of approved hospital training after medical school before the physician is eligible for full licensure. Frankly, I am not certain whether this should be a legal requirement or a voluntary matter, as is internship in many states at the moment. In any case, there no longer exists good reason for spelling out the detailed nature of hospital training, for, it seems to me, it would be more realistic and effective to leave this to those institutions and agencies most directly concerned with educational methods and standards.

Moreover, years of experience have indicated that the quality of medical care rendered will not be uniformly of the high standard that the public has every right to expect without some definite stimulus to insure that all practicing physicians regularly keep abreast of important developments in medicine. Here are some of the many possible forms that this stimulus could take: 1. It could be a requirement of licensing that holders of licenses must at intervals demonstrate (through reexamination) that they have retained important basic knowledge and competencies and have kept up to significant advances. 2. It could be a requirement of licensing boards that holders of their licenses regularly participate in acceptable programs of continuing medical education. The developing activities of the Council on Medical Education and Hospitals in the postgraduate field should make this approach feasible in the near future. 3. This stimulus could be made a nongovernmental function by making reexamination, postgraduate education, or both requirements for continuing membership in organized medicine and specialty and other medical associations. This idea would broaden the kind of function now performed by the American Academy of General Practice.

I am not at all certain which of these methods is best. The first (reexamination) would produce the quickest result, but there is no assurance that it is best. This is a matter for careful study by all concerned, and it seems a logical function of the federation to pursue actively this study in cooperation with other medical groups that are interested and share this concern.

I do not offer this latter suggestion as something to consider, say, in 1965, 1975, or some later date. I strongly believe that the public and the profession must be assured now of the high standards and qualifications of physicians. Somehow this must be accomplished if medicine is to live up to its full responsibilities in this changing world.

Let me assure this federation that the A. M. A.'s Council on Medical Education and Hospitals is and will be interested in pursuing with you jointly all these matters concerning continuing education, reexamination, a minimum of two years of approved hospital training, curriculum experimentation, and requirements for medical school graduates.

To me the title of doctor of medicine has always meant obligation and responsibility. In this present era of rapid change and development, men of medicine must look at themselves and their profession with searching eyes and a critical mind. If we are willing to do this and are ready to take all positive steps that are necessary, we will fulfill the pledge of our profession to the public to attain the best possible medical care for the American people.

1836 South Ave.

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WHY THIS CONFERENCE?

Leland S. McKittrick, M.D., Brookline, Mass.

The breadth and increasing complexity of medicine have made it necessary for the physician to concentrate his efforts in certain limited areas for purposes of study and teaching and for the clinical application of what we already know and are now learning. It is through the intensive efforts of various groups working in special fields at the research and clinical levels that the amazing developments of the past two decades have been possible—developments the magnitude of which no one could possibly have foreseen when the first specialty board (ophthalmology) was organized in 1917 to (1) elevate the standards of ophthalmology, (2) determine the competence of ophthalmologists who desire certification, (3) conduct examinations for candidates who appear before the board and issue certificates to those who pass, and (4) act as advisors to prospective students in ophthalmology.

From the expressed purposes of those who founded the board it would seem almost certain that they expected to establish ophthalmology more firmly as a special field of endeavor, to establish minimum standards, and to place an official stamp of approval on those who were able, by examination, to show evidence that they had acquired the necessary educational and practical experience.

Although this small group recognized the importance of establishing definite educational standards for the practice of a specialty, no one of them could possibly have foreseen the importance of this step in the preparation for, as well as the practice of, the specialty. Nor was this recognized in other areas until the 1930's. During this decade widening interest resulted in the rapid development of 13 new specialty boards. In 1933 the Council on Medical Education and Hospitals was authorized by the House of Delegates of the American Medical Association to "express its approval of such special examining boards as conform to the standards of administration formulated by the Council." Within a year the Advisory Board for Medical Specialties was organized. There are now 18 recognized specialty boards and, in addition, the American Board of Thoracic Surgery, which is organized within the framework of the American Board of Surgery. Since the several areas of clinical specialization are still without board status, the end may not yet be in sight.

These boards have not developed according to any preconceived plan or pattern. Specialty boards are approved by the Council on Medical Education and Hospitals after study and recommendation by the Advisory Board for Medical Specialties. Each board, for practical purposes, then becomes autonomous. Each may conduct its own affairs with little regard to the over-all developments in medical education and medical practice. Nevertheless, because of them our research has been more rewarding, our teaching at the graduate and undergraduate levels has improved, and those patients for whom specialty care has been available have benefited greatly. Board certification has assumed a position of importance—in government, hospitals, and educational circles—neither foreseen nor desired by the most ardent supporters of the boards. Even the evil heads of medical economics and philosophies of medical practice have been raised.

Our own interest is primarily in the broader aspect of education. Will the best interests of education continue to be served by further fragmentation of study of the human body and its ailments with the resulting rigid and, at times, uncorrelated departmentalization within our larger areas of medicine and surgery? I doubt that anyone would suggest that we discontinue our training programs aiming toward certification in general surgery and, instead, develop one surgeon to do hysterectomies, another to do supradiaphragmatic repair of the hiatal hernia, another to remove carcinoma of the intestine, and still another to resect the aortic aneurysm. Yet the development of specialty training programs, each with its own resident staff, is making it increasingly difficult to maintain good training programs in general surgery in many of our best hospitals.

In recent years I, as a surgeon, have tried, without success, to reorient in my own mind the relationship between the surgical specialties and general surgery. Is a surgical specialty an area within the broad base of surgery in which special knowledge is acquired and training in the special techniques obtained in lieu of a better understanding of the broader physiological, pathological, and technical aspects of general surgery; or should certification by a surgical specialty board designate the acquisition of special knowledge and special techniques over and above those of the general surgeon? Is it this latter concept of a surgical specialty that prompted the founders of the Board of Thoracic Surgery to require certification by the Board of Surgery before becoming eligible for examination by their own board? Thinking again in relation to my own specialty, I have asked myself if the rebirth of Wertheim's operation for cancer of the cervix and the development of pelvic exenteration for late can-

Chairman, Council on Medical Education and Hospitals, American Medical Association.

Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 8, 1959.

cer of the female genital organs represent advances within the special techniques of obstetrics and gynecology or if they are only examples of the extraordinary developments in the broader field of general surgery. Is knowledge of the technique of total cystectomy with internal kidney drainage and an understanding of the early postoperative complications which may follow more closely allied to the problems of abdominal surgery or to those of the genitourinary tract? To put it concisely, considering the developments of the past decade, both in special fields and in surgery in its broader sense, is it easier to make a good specialist out of a well-trained surgeon or a good surgeon out of a well-trained specialist? I raise these questions in a spirit of complete understanding of our debt to the specialty boards for their invaluable contributions to medical research, teaching, and patient care—not in a spirit of criticism. I do suggest, however, that the developments in all fields of medicine since the organization of the boards have been so rapid and of such magnitude that the time has come when medicine as a whole and its specialty groups should carefully reevaluate the effects of our newly acquired knowledge on specialization and its relation to the parent disciplines and to our future educational programs.

1180 Beacon St. (46).

WHY THIS CONFERENCE?

Ernest L. Stebbins, M.D., Baltimore

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The Advisory Board for Medical Specialties was established 25 years ago. There was, at that time, a growing concern because of the degree of specialization in medicine resulting from rapid advances in medical science and technology. The purpose of the board was to provide a mechanism for continuing study of some of the problems of specialism and to encourage and maintain standards of graduate education and training in those fields of medical practice in which highly specialized knowledge and skills are required. At the time the board was established, there were four organized specialty boards concerned with educational standards which offered examinations to test competency of specialists in these four medical specialties.

In 1958 there were 18 specialty boards represented on the Advisory Board for Medical Specialties, and these boards examined candidates and issued certificates in 51 different specialties or subspecialties of medicine. The proportion of licensed physicians certified by the American boards has more than doubled in the past 10 years. This increase in specialism is perhaps most obvious in medicine, but it is not peculiar to medicine. There has been a similar trend toward specialism in almost every phase of professional, scientific, and technological activity.

President, Advisory Board for Medical Specialties.

Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 8, 1959.

Reason for Trend Toward Specialism

The reasons for this trend toward specialism are many. The most obvious is what has been called the "explosive" rate of technological change and the increasing complexity of the whole range of scientific endeavor. This explosive increase in knowledge is directly related to an increased recognition of the value of research and discovery. The wartime development of research in nuclear physics served as a demonstration of the tremendous potential of organized and systematic study of unsolved problems. The impact of this demonstration is seen in the striking increase in support for medical research in the postwar period. The results of this acceleration in an already rapidly developing scientific field have been greater demands for education and training and inevitably greater specialization.

A less obvious, perhaps, but none the less important factor in the increase in specialism is the natural human drive toward excellence. The satisfactions derived from superior accomplishment are a powerful incentive, even though this may mean a restriction of the field of activity. The extent to which this restriction of the field may be necessary is related to the length of time necessary to acquire the special knowledge and skills. It has been estimated that a lifetime would not be long enough to acquire a high degree of competence in even a fraction of existing medical specialties. Consequently, specialism has tended to concentrate on

highly technical skills, organ systems, groups of diseases, parts of the human body, or segments of the population. Other less admirable reasons for specialism include the greater material rewards frequently offered and the social prestige associated with at least some of the medical specialties.

Impact of Specialism on Medical Education

The impact of the trend toward specialism on medical education has been profound. There is some evidence of the influence of this trend to specialism on undergraduate medical education, but it is particularly felt in graduate education and training. The specialty boards, with few exceptions, require that every applicant for certification shall have completed from two to five years of formal and approved graduate education and training in the field in which they wish to be certified.

The Council on Medical Education and Hospitals of the American Medical Association, working closely with the specialty boards, reviews the quality of the educational programs in hospitals or other institutions providing specialty training. In 1934, when the Advisory Board for the Medical Specialties was established, the Council listed 377 approved hospitals offering 2,373 approved residencies. In 1958, 1,248 approved hospitals offered 5,300 approved residency programs providing opportunities for specialty training for approximately 31,000 physicians preparing for examination and certification in one or another of the recognized specialties of medicine. Residency training has become a rapidly increasing and more and more important component of the total program of medical education in the United States.

This tremendous increase in specialism in medicine has raised many questions. Is the trend toward more and greater specialization in the best interest of the patient and of the physician? Does it prevent or interfere with the necessary continuity and personalization of the care of the patient? Are there serious economic consequences to both the patient and the physician? Has specialism, or more specifically the specialty boards, had an undue influence on graduate medical education through rigid requirements which must be followed in order to achieve the coveted certification? These are questions which seem to deserve the serious and thoughtful consideration of the medical profession and those interested in the improvement of medical care in the United States.

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THE RISE OF SPECIALISM IN MODERN SOCIETY

Paul M. Gross, Ph.D., Durham, N. C.

I am honored to be asked to present the initial background paper at this 55th Congress on Medical Education and Licensure, the broad subject for discussion of which is "specialism in medicine." Nevertheless, I must begin by warning that I am somewhat at odds in my thinking with some of the implications of the title which has been assigned to me, that of "the rise of specialism in modern society."

History of Specialism

If the methods of modern quantitative sociology were applicable and if the historic source materials were available, I strongly suspect that it could be demonstrated that "specialism" has always been an accompaniment and even an essential element of organized societies, especially those which were as highly urbanized as our own. Indeed, this has been done, in some measure, by such archeologists as V. Gordon Childe and others, who place the beginnings of specialization as far back as Neolithic times in the early history of man's development.

Faced with the bewildering complexity of our own social structure, its profusion of implements, machines, instruments, devices, gadgets, and specialisms, we are prone to think the latter are characteristic of our time. Anyone who has visited the Museum of Egyptian Antiquities in Cairo and seen the high state of development of household and fine arts in such exhibits as those of the Tutankhamen tomb (1350 B. C.) must realize this civilization had its full quota of specialists of all kinds. These must have included not only highly developed specialties among artisans and craftsmen but a professional type of specialization in architecture and engineering. All evidence points to a similar high degree of development of specialism in the household arts, agriculture, and the fine arts. Thus, one must speak with caution of the "rise" of specialism in our times. It has been a continuing component of civilization, at least in historic times.

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Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 8, 1959.

What of other aspects of specialism in our society as we know it today? How many specialisms are there in our social structure? It is easy to find listed some four to five hundred of these if one looks in such a place as a guide to allowable income tax deductions related to one's job. Actually, there probably are as many more again if we include the more esoteric specialties, such as those of abbot, through carillonneur and dowser, to zitherist. Are we all specialists, and what do we think of specialization other than our own? Do we not all in some measure agree with Shaw's statement in the "Doctors Dilemma" that "All professions are conspiracies against the laity"? Indeed, we may ask whether there is any common denominator or "common man" of the "fair deal" brand. Are we not in reality confronted in our complex social structure with a "lack of laity"? If this is at least in some measure the case, it may well be one of our grounds for suspicion and concern about the growth of specialism in all lines of endeavor. We may ask if this is a characteristic of our modern society and in a measure unique to it and to our times. Again the answer appears to be negative. The thoughtful citizen of the great ancient metropolis of Rome with a population of about 1,750,000 persons in the second century A. D. must have been confronted with some of the same questions we are discussing today. The highly organized civilization of the Roman Empire must have required a great degree of specialism among its citizenry to sustain its roads, aqueducts, commerce and food supply, logistics of the support of its armies, and the government of its far-flung colonies and provinces—not to speak of the high state of development of the fine arts and literature of its age.

Thus it appears clear that elaborate specialism, at least somewhat comparable in scope to ours, has been a constant and prominent ingredient of all great civilizations and especially of those which were highly urbanized. If this gives us a correct historical perspective on specialism in modern society, we must look elsewhere for the concern about this aspect of our society's organization which leads to conferences of the type of this one. It appears that our search for an understanding of this concern must take at least two directions.

The Nature of Specialism

The first of these relates to the very nature of specialization itself. Particularly in the realm of intellectual endeavor the intense concentration of a person on a limited special area of knowledge and his attainment of expertness and competence in this area tends to break the broad pattern of uniformity in the over-all social structure, especially in a democratic system such as ours. This degree of separation or even isolation of the person from the broad stream of the common affairs of man may lead to uneasiness in the mind of the average citizen. I am sure all of us share this feeling in some measure when we consider the specialisms followed by others, though of course we always except those in which we are, ourselves, engaged.

Numerous examples of this situation could be cited. One of the most obvious is the broad reaction in the body politic to the economic ideas and influence of the economic advisors to the "new deal" school of thought under Roosevelt. The uneasiness is often greatly aggravated by the habit of specialists to develop and use an entirely new nomenclature and terminology in describing and discussing their specialty. The one-time vogue of the word technocracy well illustrates the point at hand. These comments would appear to be valid in relation to specialization in any area of human endeavor, whether in science and technology, in the labor structure, or in the arts. The existence of highly differentiated specialisms is bound to present a certain divisive element, which, at times, may be characterized as subversive, in the broad fabric of the social structure. Thus, in public opinion, the discoveries of the nuclear physicists and chemists leading to the release of nuclear energy were, and still are to some degree, thought to be an area in the search for new knowledge better left unexplored. Such thinking was obviously not confined to the common man and the general public, if we recall the controversy among scientists, themselves, as to whether investigations leading to the development of the hydrogen thermonuclear reaction and the hydrogen bomb should be undertaken at all. This reached high places in the scientific hierarchy and was one of the crucial elements involved in the Oppenheimer loyalty investigation. This particular situation pointedly brings out one of the difficulties of specialism, namely, that the eminent specialist highly qualified in his own field is often regarded as competent and expert in the broader problems of human endeavor. All too often this is not the case. As Sir Arthur Conan Doyle, in "His Last Bow," described one of his super sleuths, "All other men are specialists but his specialism is omniscience." Here, then, is one of the dangers and one of the reasons for concern about specialism—not specialization per se or the attainment of great competence by the specialist in his field but the public's tendency to assume that such expertness provides sound ground, and even a type of omniscience, in dealing with the broader problems of human affairs.

Specialism in Science

The second direction in the search for the origin of our concern with specialism in modern society relates to the emerging scientific specialism. I have no competence to judge whether this applies to other areas than the sciences, so my discussion will be confined to the changing nature of scientific and technical specialization as we see it today.

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As background, we need to consider the modern developments in science, itself, to show their significance for specialism in our society. To understand the picture clearly we must differentiate between two broad kinds of specialization. The first of these, while it exists in large measure in our present society is not new but has had the same components throughout history. This can best be described in terms of the high degree of skill and intimate knowledge that the artisan, craftsman, artist, or workman in a special area can and does attain through long practice, deliberate development of skill, and wide and increasing acquaintance with the material and function of his specialization. It is best characterized by speaking of the art involved in his specialism. The competence of specialists of this type has constituted, and still does, the backbone of much of our working civilization and of its basic needs, as well as luxuries and enjoyment. In other words, high competence in the development of arts and crafts of our time has brought us to the rich level of civilization which we enjoy, whether or not we endow the experts in these fields and the fields, themselves, with the dignity of professionalism. Such growth will continue to be effective in the further development of the arts and crafts and even in much of our technology.

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To this continuing and ever-growing stream of specialization, a new and important element was added beginning about the middle of the last century. This was the methodology of research and development as we use it today. From its limited effect in the last century, this broad technique has, by the middle of this century, become the most important single influence in scientific, technical, and industrial areas that affects our rapidly changing civilization. To understand this and its significance for the concept of specialism, particularly in technical areas, requires a review of the changes in science during the past century.

This is not the place to develop these in detail, nor is there need to do so for this audience. Suffice it to say that from the early days of the alchemist to the opening of this century, scientific activity grew at an increasing rate and its importance and relation to economic development was greater with each passing decade. Nevertheless, the scientist, and especially the so-called pure scientist, continued to be a little-known member of society who worked in relative isolation in his "ivory tower" laboratory—commonly on some university campus. During, between, and after the two wars, a new scale of scientific and technological activity emerged. One of the first and most striking points of impact of this new activity was in the area of military affairs. The war gases of World War I, the development of air transportation and the great air forces, rockets, and the proximity fuse of World War II, were part of a trend to the highly scientific warfare techniques of today. The capstone to this trend was the development of the nuclear bombs, of nuclear propulsion in the Nautilus, and of missiles and the orbiting satellites.

Of equal and even of greater significance was the impact of this new technique of research and development on industry, commerce, and the entire economic structure. Old industries were revitalized or fell by the wayside; entire new and often giant corporate enterprises based on new products emerged, as in the electronics industry. Old ones, such as the food industry, were completely changed through new packaging and marketing techniques. The basic know-how for these changes came rapidly in a span of some quarter of a century through the widespread establishment and application of industrial research and development laboratories and their techniques throughout much of industry. What was literally a new type of industrial revolution was an accomplished fact by the middle of this century.

This is an old story to most of us here. What is not so well realized or so often understood is the enormous effect of these changes and of these new developments on the broad discipline of science itself. The rapid growth of the ranks of the scientific population and their spread and diversification, the new facilities, instruments, and techniques available, and the realization of the power and importance of well-organized collaborative effort have had the significance of a fourth dimension in scientific thinking and activity. As a consequence, there is new imagination, boldness, and scope in scientific planning and execution. This is well exemplified by the world-wide scientific enterprise we know as the International Geophysical Year. Here for the first time is a full-scale concerted effort in both time and space to understand the nature of the earth's environments—weather, climate, atmosphere, land, and oceans—and to analyze the hail of outer space radiation, luminous, thermal, ionic, and nuclear, to which this planet and its life are constantly subjected. Further, it is important to understand that this new effort is multidirectional. Global studies and the reach to outer space are spectacular but no more bold or imaginative and probably less significant for human affairs than the probing in depth of the chemist and physicist within the atom and the nucleus or of the biologist and biochemist within the cell and the genes.

So much for the renaissance in science, but what of its implications for this discussion of specialism? One thing seems clear and can be pointed up by an old saying which many of you must have heard. This is the description of the attributes of a specialist (usually a scientist) in comparison with those of a salesman:

"A salesman is one who begins by knowing a little about everything and who goes on learning less and less about more and more until he ends up knowing practically nothing about everything." On

the other hand, "A specialist is one who starts off knowing a great deal about very little and goes on learning more and more about less and less until he ends up knowing practically everything about nothing."

The first description we can ignore for our present purposes. The second, in spite of its nonsense-lyric flavor, will bear more scrutiny in terms of this discussion. The trouble here is the lay conception that what is restricted or limited is simple and in its limits amounts to "nothing." Here is one cue to the problem of specialism, particularly in science, and to the lay public's understanding of it. As scientists we should not lose our perspective but recall the history of our discipline and remember that it has survived through pestilence, wars, and disasters and surmounted the barriers of race, language, and religion. It is indeed well to recall in this gray period of cold war with its iron curtains that the human race throughout its long history and evolution has had one common opponent: inscrutable nature, nature with her seemingly inexorable laws, her hosts of organisms and parasites, hurricanes, and catastrophic events of flood, earthquake, and epidemic. For our human race the central problem still remains to understand nature and control it. Scientists are privileged, as the lay public is not, to appreciate the great accomplishment of the truly great specialist with his fascinating glimpses of things to come, as the ramparts of our incomprehension of nature are breached from time to time by a "break-through." These ramparts are formidable in their complexity, and it is rare that they succumb to an attack along a broad front and then only in the hands of a genius—and geniuses are rare in the human race.

Justification for Specialism

Here then is the basic justification for specialism in science. The fundamental, over-all problem confronting us, that of a better understanding of nature, is immensely complex and involved. Only by concentrated, competent, and enlightened attack at numerous limited areas as they open up to us through investigation can we ever hope to begin to understand the whole. By this token one can confidently predict that true specialism in science will continue to survive and multiply.

This confidence is further strengthened as we look ahead in the light of the past. In science, much of our concern and achievement of a successful understanding has been in relation to inanimate things or parts of things or with relatively simpler organisms or functions within organisms. We must not forget that we, ourselves, are part of the great fabric of "nature." As our investigations and growing knowledge permit us to move more surely to such studies as some branches of human behavior and its physiological, genetic, and other bases, we can envisage new coalitions between neuroanatomists, neurophysiologists, and psychologists. These will, in turn, develop as specialties and may even be dignified with the designation of professions or even disciplines, as in the case of present-day biochemistry and biophysics.

Facing this prospect, alarming to many of us, let us look at the negative aspects of such a further development of specialization and post some warnings. Specialization in the historic and classic context is here to stay; we can do nothing about it. The type of specialization arising from the renaissance in scientific thinking and operation will have a profound impact on the growth and character of science. Here the danger is that the form will be mistaken for the substance. To illustrate and at the same time not to draw invidious comparisons, let us imagine some future specialism, which, for want of better term, we will call neurobehaviorism. On what will its worth and validity as a contributor to our knowledge and as a field of endeavor depend? In the first instance, it depends on how well the workers in its field are based in the fundamentals of the derivative sciences of neuroanatomy, neurophysiology, and neurobiochemistry. Of as much or even greater importance would be how well they understood, or could acquire understanding of, those relevant and applicable principles from the basic, underlying sciences of mathematics, physics, chemistry, biology, and psychology.

In other words, the criterion of the worth and validity of an area of specialism in the sense outlined here is how solid and clear the pathways are from the outer branch to the deep and firm roots of available knowledge. An episode which Prof. Perry Miller relates about Ralph Waldo Emerson in the late 1830's at Harvard is to the point here. At that time, the then-young naturalist philosopher Henry Thoreau was an intimate of the Emerson household. One day he sat quietly in a corner while Emerson expounded to English visitors, "At Harvard college they teach all branches of learning." Thoreau then embarrassed his patron by blurting out, "Yes, but none of the roots." Unless there is vital and continuing sustenance from strong roots the branches of specialism will bear meager fruit.

Since this conference includes, as it should, discussions of medical education and research, it is appropriate to allude at least briefly to some of the implications that may be seen for scientific training in general and medical training in particular. Here one consideration seems paramount, and Thoreau's comment carries deep wisdom. Our effort in all scientific education should be to lay soundly the important fundamentals and to inculcate the knowledge of how to reason and make application to the particulars. As scientific knowledge becomes more and more complex there is no hope for sound training, within the limitations of the human mind and capacity, but to follow this route. The experience of the great and small industrial research organiza-

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tions in the past 25 years provides clear evidence to support this point of view. In the early days of their inception in the 1920's, the total number of engineers and scientists employed was well below 100,000. At that stage of their growth they talked often of trained dye chemists, textile chemists, refrigeration engineers, and others in recruiting new employees from educational institutions. Today, after this experience and with a scientist and engineer roster of some 750,000, they ask that the scientific educational institutions train such students in the fundamentals of mathematics, physics, chemistry, biology, and similar disciplines and that they try to teach the technique of application to a particular problem. While the problem of sound medical education is admittedly more complex, there is at least food for real thought in this experience.

In retrospect, it appears that this presentation, contrary to its own theme, has been an attempt to select what appear to be the few essentials of the situation with respect to specialism in modern society. Such generalization has its obvious pitfalls. Perhaps it can be best characterized in the phraseology of Dean Wilburt C. Davison of Duke University Medical School. In the preface to his book "The Compleat Pediatrician," which copies the format of Izaak Walton's "The Compleat Angler," he says: "In contrast to many pediatric books which too often resemble the old-fashioned hoop-skirt in covering the subject without touching it, this book is like a G-string in touching the subject without any pretense of covering it, or even more aptly, like a brassiere in only touching the high spots. In other words, this book attempts to present the bare facts."

It is hoped that this discussion has pointed up some of the "bare facts" and high spots of specialism in our society and of their origins and that it will serve as a useful backdrop for the further detailed sessions of this congress.

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SPECIALIZATION AND THE PURSUIT OF EXCELLENCE

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To what extent is specialization compatible with the pursuit of excellence? This is the question implicit in the association of these two ideas in our title. And since we are living in a civilization which requires and cultivates a higher degree of specialization than any in the past, we are also asking by implication whether our civilization is compatible with the pursuit and attainment of excellence.

Problems of Excellence

It is safe to assume general agreement on the proposition that the attainment of excellence is the proper end in the cultivation and use of our faculties, just as health is the proper condition of our bodies. Among normal people a serious disregard of health is felt to be irresponsible and the deliberate committing of acts which must destroy health is regarded as abnormal. We have somewhat the same feelings about people who misuse their faculties, fail to cultivate their talents, and are slovenly about their human powers and special abilities. We normally respect the person who attempts to maximize his powers and to realize fully his special talents and even to cultivate style and elegance in his use of them. "If our virtues did not go forth of us," says the Duke in "Measure for Measure," "'twere all alike as if we had them not."

The comparison with health is suggestive not only where the analogy applies but also where it does not. In its ideal condition, health requires neither awareness nor deliberate effort. The healthiest object in nature is an active child who is unaware that he is healthy. It is only during illness or when the optimum state is past that we become aware of health and cultivate an interest in improving or maintaining it. With our faculties and powers the case is different. Even in skills, such as walking, which seem instinctively prompted, their mastery requires conscious effort, imitation, and improvement. The use of our faculties has to be learned. Moreover, we must practice and cultivate habits for their correct use, and, even after we have learned some skill, we must occasionally review its status and correct our lapses or try to conform to better models. This applies not only to manual skills but to such skills as speech and the proper use of our intellectual faculties. We usually take it for granted that we can speak and reason, but to refine these abilities we study the principles of

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grammar, rhetoric, and logic and we acquire such sophisticated tools as scientific method. Excellence has to be acquired.

There is another difference. Health is indivisible; it is total. The satirist Swift pointed out that the reason we talk so much about illness is that it has many fascinating variant forms, whereas health, like goodness, is a single state and does not therefore provide so many interesting topics to talk about. Excellence is unlike health in that it is of particulars. It is concerned with particular skills associated with particular human powers and faculties. Since these have to be trained and their appropriate skills learned and mastered, there can be no total excellence. We admire the command of language of a writer, the fine physical coordination of the athlete, the virtuosity of the musician, the experimental brilliance of the scientist. But we find that these various forms of excellence do not exist simultaneously in all people. Versatile people are rare, and their versatility is, in any case, limited to a few things. Even within a particular area, the range of excellence is circumscribed. We do not normally find combined in one person the original composer and the fine tenor, the outstanding tennis player and the outstanding football linesman, the great writer and the great actor, the astronomer and the biologist. The conclusion is, I think, inescapable: excellence demands specialization.

It would appear that we have resolved the question with which we started. Not completely, however. Although our conclusions so far are not likely to be challenged, there exists at the same time a universal suspicion that the excessive development of any single facet can have a deforming effect on the person. The ideals and models of human development which have been admired and recommended by great civilizations in the past have invariably emphasized the harmonious development of the whole man, and this prototype still appeals to us today. We share the universal awareness that, like many good things, specialization has its abnormal and perverse manifestations, but in our time this realization is rendered urgent and acute because the technological standard of our civilization and the learning on which it depends require an unprecedented degree of specialization and it appears that we are compelled to risk its worst evils and abnormalities in order to secure the advantages of specialization—the existence and well-being of our society. The normal word of caution about the dangers of undue concentration on a limited area of skill and expertness has accordingly assumed the proportions of an elaborate critical apparatus. Our graduate and professional schools are criticized for turning out narrowly trained men, and specialism is attacked with seriousness and asperity and, sometimes, with a note of impatience similar to that which colors writing on the subject of teen-age mores and juvenile delinquency.

Problems of Specialization

In order to preserve a sense of proportion it is important to bear in mind that there are inherent defects which can appear even when specialization is pursued with the best of motives, the desire to excel and to become proficient in some useful art or science. Any such effort requires a degree of technical mastery and expertness. This skill is not the end but the means. But as long as one is clumsy or uncertain about the means he cannot make the best use of his talents and direct them to their proper ends. As long, for instance, as a musician is not master of his technique, he cannot put his mind to the meaning he is trying to get out of the score. Only when technique is largely a matter of habit and can be disregarded is one in the best position to exploit his art or profession or trust himself to attempt innovations. For the beginner, however, the mastery of the means is a difficult and absorbing matter and virtuosity becomes the immediate goal and sometimes the end itself. Often he is encouraged in his confusion. Virtuosity and extensive knowledge are widely admired, and they have a legitimate appeal of their own. We learned from the quiz shows that large numbers of persons stand in awe of anyone who has accurate answers to tough questions over a wide range of topics. And most of us experience exhilaration at witnessing a hard technical feat performed with apparent ease—the sense of difficulty overcome, as Wordsworth put it. I have noticed in dance performances that the applause often comes not when a beautiful effect is realized but when something difficult is done repeatedly, even though at times the stunt looks painful or ludicrous.

The striving for technical perfection or for total knowledge within a particular field of learning is admirable, but it is also the beginning of pedantry when these become ends in themselves and are divorced from their true purpose and the proper consequences of their use. Pedantry in learning has always been an easy and favorite mark for the satirist. Swift, writing in solemn irony, remarks that, as distinguished from superficial learning, true wisdom is like a hen "whose cackling we must value, because it is attended with an egg," and like a cheese "whereof to a judicious palate, the maggots are best," and, lastly, like a nut "which unless you choose with judgment, may cost you a tooth, and pay you nothing but a worm." But there is a pedantry in things other than learning; there is also a pedantry in skills, virtuosity, and expertness.

In an indulgent mood, we can regard the display of expertness and learning for their own sake as harmless. It elicits applause, and it might prove useful sometimes. But we should temper our indulgence when we reflect that it is always a human error when the means and ends are confused, and sometimes it is not harmless. The expert is not

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happy unless he uses his expertness, especially when his skill wins him applause, and the narrower the skill the more compulsive is the need to use it. If there are no occasions, he makes them. This accounts for our nervousness when the military gets hold of a fine new weapon. Often the exercise of a skill becomes a ritual act. We are familiar with the phenomenon of fashions in medicine. I suspect that they are often the compulsive and ritual manifestations of a useful knowledge or skill. Not too many years ago it was regarded bad practice not to extract any tooth that was devitalized or even suspect. During the same era the slop pail became the destiny of many a tonsil which today would be treated with more respect. Fortunately, the compulsive and ritual exercise of expertness is often self-correcting, since it tends to go too far for its own good. And there are always the maverick, the genius, and the skeptic in the new generation to set things straight again. In the meantime, however, the quest for excellence is perverted. Finally, the repetitive exercise of skill and the routine application of even an impressive body of knowledge tend to block originality. Hence the paradox that, although the full concentration of our powers on a proper end is difficult until the mastery of the means becomes almost a matter of habit, the expert who has come to depend on the habitual exercise of his specialty is unlikely to innovate—except by accident, when he needs to have all the luck on his side.

These various deformities of the quest for excellence are inherent in the nature of specialization in the same way that each possible form of government has its obverse side, so that, as Aristotle pointed out, monarchy can become tyranny, oligarchy bureaucracy, and democracy rule by demagogue and mob. Every civilization has therefore had to recognize the detrimental side-effects of specialization, since specialization is a necessity of civilization. Primitive man does everything for himself. It is only when functions become differentiated that arts develop, mastery over environment increases, and thought and leisure are possible. From this point of view no civilization can be compared with our own. In consequence, the accompanying vices of specialization are potentially increased, for as knowledge becomes more exact and practice becomes more effective the number of specialists increases. This subdividing has affected even apparently simple crafts (I have been informed that among expert tailors a coatmaker would not undertake to make a pair of pants), but when we come to the various advanced sciences and technologies the subdividing becomes formidable. It was once possible to speak simply of physicists, biologists, and physicians. I recall the lettering on windows of comfortable-looking houses and small office buildings: Dr. Blank, Physician and Surgeon. Within a few decades all this has been changed. At the dedication of the Midwest Library Center a few years ago, one of the visiting librarians was introduced to a distinguished scientist who was described as a mathematical biophysicist. The librarian was annoyed. "Why," he said, "can't you fellows stay within the system of classification established by the Library of Congress?"

This librarian, however, is in a dwindling minority. The public admires specialists. The professions admire them. The so-called generalists are out of fashion if not out of date. Occasionally we do them homage, as though recognizing an impossible ideal for old time's sake. Now and again the medical profession will single out a general practitioner toward the close of an honorable career and give him public honors, but there is something sentimental and nostalgic about this gesture. It is as though there had been introduced the practice of honoring the knight of the year during the late Middle Ages after the invention of gunpowder and firearms. Fundamentally, our instincts are right. We respect the man who tries within the short limits of a lifetime and the demands of an important field of activity to take all knowledge to be his province, but we are at the same time aware that, the more knowledgeable and effective a profession becomes, the more refined are its means, the more exacting its demands, and the more likely its drift toward increasing specialization. As primitive man is a generalist and takes care of all his own needs, the practitioner in the primitive stages of a science or profession encompasses all the parts and skills of his chosen field. As the profession advances, its parts are differentiated.

This process of differentiation in all branches of learning and in all professions has proceeded at an incredible rate during the last few decades. If we have come to pay tribute and do homage to the specialist it is because we recognize him as an absolute necessity in the advanced state of our technological success and the magnificent complexity of our civilization. He is our high priest. But we have not, at the same time, neutralized any of the endemic diseases of specialization; we have only multiplied the chances that they will occur and increased the possibility that when they do occur they may be harmful. Moreover, because the power and prestige of specialization have been widely acknowledged, specialists become increasingly concerned about status. They are jealous not only of the position of their profession in society but of their position and their rights and privileges in their own profession. (There has never been a jurisdictional strike in medicine, but there is no theoretical reason why there should not be.) And as specialties multiply and narrow in range, while simultaneously their prestige increases, it becomes easier for ignorance to conceal itself in technique and pedantry to parade as art.

The acute stage which our civilization has reached in experiencing the practical, social, and psychological problems of specialization is in large part a function of the state of learning in our times. The magnitude of our research activity is appalling, and so is the rate of its flow into the mainstream of learning. The record of the activities of our culture comes close to being total. Every scrap of official data is preserved; every research effort, including Ph.D. theses, is published. The stream of knowledge is a resounding cataract. To cope with it properly one has to select a limited area; to keep up with its course has become an unremitting and exhausting task. Moreover, the state of learning has become so advanced that the extreme boundaries are accessible only to the fully equipped explorers. This is true even outside the sciences. The exact understanding of such writings as the poems of T. S. Eliot or "Finnegans Wake" is no more for the casual amateur reader than is the proper understanding of Einstein.

A surprising and sobering fact about our culture is that, while its total knowledge is vast and of extraordinary refinement and the potential for more—and more recondite—knowledge is apparently inexhaustible, the area of individual ignorance is becoming correspondingly greater. As knowledge in every area increases and as the number of areas in which exact knowledge is possible multiplies, the individual's chances of knowing what there is to be known are radically reduced. This axiom applies not only to the man outside a particular field of learning but also to one in it. Every notable advance in physics, for example, renders not only the nonphysicist more ignorant but also the average physicist as well. In every science we will find good men who modestly concede that concerning some significant phase of their subject they do not know enough to have an educated opinion. We are in a better position than any before us to realize that the pursuit of excellence demands specialization and that the pursuit of specialization creates problems.

Possible Solutions

What solution is there, if any, for this age-old yet characteristically modern dilemma? There are pessimistic answers to that question, and if I had time enough I would enjoy the philosophic luxury of exploring them. However, the human animal being resourceful, its first impulse is to devise means for insuring its survival. In conformity with this normal and admirable instinct, I will try to suggest some possible ways of meeting the problems raised by the advanced state of our technical skills and the accelerating rate of our increase in knowledge. In doing this I shall try to keep in the foreground the special case of the medical profession.

The dangers and limitations inherent in excessive specialization can have more serious consequences for the medical man than, for instance, the electronics expert, not simply because of their possible human consequences but for their professional and scientific consequences as well. In simple situations, the need for a particular specialist's ministrations may be obvious and beyond question, but often it is not and sometimes, even when it is, judgment is required to determine whether that is all that needs to be taken into account. The object of the medical specialist's attention is an individual man, and that means not only that the specialist is dealing with the most complicated of all biological machines but that he is dealing with a being who must make continuous difficult adjustments to an involved social environment and who is the product of a unique personal history. One of the most profound emotional consequences of illness is the patient's troubled and only partial awareness that he has become an isolated object, that he has somehow lost his status as a distinctive, active human being and has been reduced to a thing. The humiliation of the individual by means of ruthless force and brutality has an analogous effect. The compulsive and ritual use of a specialty and the attendant blindness to contingent factors neglects this important aspect of the problem and in doing so interferes with the possibilities of the medical art and science at its best. Good medical practitioners have always been aware in some measure of these aspects of the problem, and I would hazard the guess that one reason for the profound insistence on the moral responsibility of the physician and the appeal to his humanity is that by this means we can inculcate qualities which act as safeguards against the neglect of the total human being and the understanding this approach provides for the nature of illness and its proper care. There is nothing more admirable than the notable efforts of the medical profession to live up to the high moral and humanitarian ideals which have been traditional with it since antiquity. If I contend that the moral and humanitarian appeal is not enough, it is not because I am indifferent to ethical and humane considerations but because as specialties multiply there must be a corresponding increase in the inclination to treat the medical problem as limited and as essentially chemical, mechanical, and physiological and, in consequence, a concurrent inclination to become detached from the total individual human being whose misery is the object of attention. What I suggest, therefore, is that the proper human use of a specialty should be approached as a function not simply of the physician as a good man but of the specialist as a good physician.

There are two possible approaches to the correction of the defects and limitations of specialization as they apply to medicine. One is through the conditions, forms, customs, and organizations which exercise control over the practice of medicine; the other is through the ordering of medical education and training.

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One promising development in the practice of medicine has been the increase in the use of teamwork, not merely in the great diagnostic clinics but among smaller groups of closely associated specialists. Moreover, the design and organization of a modern hospital has been shaped by a recognition of the contributions which a large number of skills may be required to make in a given case. To be sure, there is the danger that a patient may become an object in an assembly line and the further danger that divided responsibility may weaken the assumption of responsibility. But, at its best, the collaborative approach avoids the most conspicuous abuses of specialization; it preserves the value of a high degree of individual limited expertness and at the same time maintains a concern for the total human being. It is like a string quartet, in which the individual player demonstrates his own skill best by contributing to the harmony of the whole. There must be, I am sure, equally valuable developments of which I am not aware. The point I wish to illustrate is that dangers and imperfections which arise out of circumstances within a profession must in part at least be countered by establishing modes of association and activity which will reduce the chances of defect or abuse without demanding of each person an exhausting measure of moral and intellectual heroism.

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The second approach to meeting the dangers of specialization must be through the training which produces the medical specialist. In the first place, since the outstanding phenomenon of our times is the appalling increase in knowledge, the aim of the training should be not the impossible one of providing for full detailed knowledge and complete experience in all the sciences and techniques that are relevant to medicine but on the basic concepts, the theoretical foundations, and the principles of method which give meaning to the vast data of the various sciences and which make possible their operation and advancement. Moreover, the subjects in the program of studies should be ordered to appear progressively related to one another, so that one step provides the key to the next and not merely the academic prerequisite for getting into medical school or the clinics. We can no longer afford to exhaust the memory, to waste time, to repeat uselessly.

We must also accustom the student from the beginning to the notion that science, in the narrow sense, is not all. On this point I wish to make clear that I am not now concerned with making cultured men out of medical specialists or providing them with outside interests to make them good citizens and with high-grade hobbies to render them less high-strung and more contented. (What do you suppose would have been the response of such men as Franklin and Jefferson to the question often asked of prominent men today: What is your hobby? Their lives seem to have been their hobbies.)

My concern is not with the relation of the medical man to his culture, his society, or his personal happiness, important as these matters are, but with his work as a practitioner and scholar in his field. If it is true that a consideration of the patient as a man in society and as a unique individual is relevant to medicine, we have one good reason for encouraging the medical specialist to temper his exclusive concern with the physical sciences and medical techniques with an interest in other sources of knowledge and wisdom about man. There is a second reason. Originality is not stimulated by narrowness; nevertheless, the specialist has become our chief hope to advance knowledge and improve practice. It has often been observed that progress in the arts and sciences sometimes seems to occur in unexpected jumps and leaps. Analogy is a notoriously undependable means for establishing truth, but I believe it is one of the potent means for promoting discovery and analogy operates best through the intuitive perception of identities in unlike items. The failure to see experience outside the schematism of a limited discipline, whatever it might happen to be, impoverishes the mind. The history of science is dotted with instances which suggest that unusual useful developments in the arts and sciences often originate from a stimulus outside the particular art or science itself.

We should consider it as a hopeful sign that there is so much current preoccupation with the need for broadness in education and so much criticism of narrowness and overspecialization, even though some of this criticism is a trifle hysterical and often ignores the fact that our civilization depends on specialists and that the advancement of learning requires specialization. Some educators, disturbed by the isolation and narrowness of the training programs for advanced specialists, prescribe heavy doses—within the limits of possible tolerance—of courses in subjects quite outside the course of study, sometimes completely remote from the area of specialization. This approach to the problem does not impress me, because it sometimes sounds punitive and self-righteous—like injunctions to take cold baths—and because it ignores the fact that after a certain point in a person's education it becomes increasingly difficult to repair the deficiencies of his past, especially by resorting to methods which are more suitable to the early stages of the educational process. By the time one has reached the final and most advanced stage in his formal training, his task has become too concentrated, his purpose too single-minded, to impose side excursions on him in the expectation that he will be taught a lesson which he should have learned long ago.

Besides, this approach to broadness in the advanced stage of the education of a specialist is an attack on the periphery and not at the center. At this stage, the heart of the matter is the way in

which the specialty is taught. It is my impression that all too often the approach is too restricted. It is too often directed toward producing the clever technician and not the educated expert. Too often, the student's attitude is that at last he can settle down to the mastery of a limited and finite body of knowledge and a sharply defined skill. And too often his teachers do not disabuse him. Tennyson wrote a poem about a flower in a crannied wall which concludes, "If I could understand what you are, root and all, and all in all, I should know what God and man is." No doubt a trifle ambitious, but it illustrates the attitude I would wish to adopt in the teaching of any specialty. It has occurred to me, for instance, that if a student of literature really understood all that is involved in the word metaphor he would have to open his mind to many matters, including linguistics, epistemology, the history of criticism, the theory of poetry, and something more besides. And the same might be said for the young scientist who tried to understand all that is and has been implied and contained in the word atom or cell.

The Norse god Thor was once taunted by the giant Utgard-Loki into attempting various tests of strength and prowess. Among them, he was challenged to lift a cat. To his humiliation, Thor found that he could not budge the animal. It turned out that this was no ordinary cat. It was the exposed portion of the fabulous Midgard Serpent whose body encircled the earth. Trying to lift it, Thor had been straining to lift the entire world. I would hope that every advanced student could be made to understand that his specialty is Loki's cat, that what he sees of it above the surface may appear small and easily manageable but that in reality it is necessarily bound to the universe.

THE NATURAL HISTORY OF SPECIALISM IN MEDICINE

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Modern medicine and specialism are historically coextensive and all but synonymous. It is understandable, therefore, that the future of medicine is commonly envisaged in the patterns of the immediate past, that is, in the further development and refinement of specialization. Those so persuaded cite the specialties which seem to be springing up before our very eyes, such as enzymology, electrolytic dynamics, and nucleic acid fractionations. In a sort of furor of enthusiasm, they picture the future practice of medicine as an orchestration of virtuosos—each the master of some refined and esoteric department in the clinical score. This vision is enticing, even though it is unrealistic and unhistorical. Essentially, it is foveal in nature, that is, of a pinpoint character and unredeemed by peripheral orientation. It is an uncritical vision that fails to differentiate between the isolated minutiae of research, the extension and perfection of technological processes, and the holism of the practice of clinical medicine.

Unquestionably, research and technology are essential and contributory to the practice of medicine, but the latter is as much above and beyond them singly and collectively as are the creations of the poet and the painter above and beyond the grammarian's rules and the studied properties of pigments and their vehicles.

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Without discounting in any sense whatsoever the import of specialization in research and medical technology, it is my intention to submit and to defend the thesis that the future of medicine lies in directions other than the further multiplication and refinement of medical, that is, clinical, specialism.

Whitehead said, "The last thing any science discerns is what it is all about." Medicine is not exactly facing "the last thing," but it is not amiss to try even now to discern what it is all about. To do this effectively, we must first take our bearings—keeping in mind that we are particularly concerned with specialism.

Historical Background

Our orientation needs to be historical, and, consulting the chronicles, we come on a most astonishing fact: specialism, which we are prone to consider a modern feature, was in effect most highly developed when medicine was in its infancy.

Herodotus relates that "besides dentists and oculists the Egyptians possessed doctors who treated diseases of the stomach only, diseases of the head only, and so of other parts of the body; indeed each physician treated only one disease." It is worth noting that in the land of the Nile medicine was completely socialized. Diodorus Siculo says that throughout Egypt the sick were treated without cost, all physicians being employed by the state. As was to be expected, physicians were required to use only the official remedies and in no case to resort

to others, unless the authorized prescriptions proved unavailing. Any transgression of this rule of practice, if followed by the death of the patient, was a capital offense.

Herodotus lived in the fifth century B. C. and thus was a contemporary of Hippocrates. In this connection we come to another interesting fact, namely, that in Greece there were no specialists. The learned medical historian Charles Daremberg affirmed in his essay, "Sur la division de la médecine" (from La Médecine, p. 454), that the Greek physicians did not even distinguish between the practices of surgery and medicine. "Between the founding of the Alexandrian and the Celsian schools, the most prominent practitioners were at one and the same time physicians and surgeons."

From this juxtaposition of "historical contrasts" in Egypt and in Greece, we can establish the conclusion that even in its earliest stages medicine exhibited a bipolar trend, one directed toward pluralism and the other toward monism. These were initially philosophical schools, but they had a profound effect on medicine—pluralism fostering specialism and monism advancing what in modern terminology would be described as the unitary or holistic view of medicine.

The ancient Greek physicians were not unaware of these conflicting trends. In the post-Hippocratic period, that is, between the time of the death of Hippocrates in 357 B.C. and that of Galen in the second century A.D., there came into being a variety of medical schools, each dedicated to the advancement of some singular phase of either the pluralistic or the monistic version of medicine. Thus there were the dogmatists, the empiricists, the methodists, and a host of minor variant schools.

To make sense out of their polemical conflicts is a difficult but not an impossible task, for what, in effect, troubled them was precisely what troubles us today, namely, how to interpret and relate the theory and practice of medicine to the data of human experience.

The monists, among whom we must count both Plato and Hippocrates, argued that the universe, and man within it, comprises a meaningful, integrated entirety which is governed by certain all-embracing principles, accessible to the penetrating intelligence of thinking man. The monists maintained that unless both man and his universe are comprehended in the framework of these embracing principles the crude data of sensation and the ever-current stream of experience can yield nothing but a bedlam of confusion.

In stark contrast to the monists the empiricists, taking Aristotle as their intellectual leader, rejected all speculative theories and dedicated themselves solely to the cure of disease. Their motto was "not to understand disease but remove it."

The issue of pluralism and monism was in some measure reconciled in Galen. Galen's "Treatise on Medical Experience" begins with the affirmation, "When I take as my standard the opinion held by the most skilful and wisest physicians and the best philosophers of the past I say: The art of healing was originally invented and discovered by logos in conjunction with experience. And today also it can only be practiced excellently and done well by one who employs both of these methods."

This is patently a noble and yet palpably a naive affirmation. For it takes experience for granted, as if experience were self-revealing, transparent, and intuitive to human intelligence. Hippocrates was not that naive. He knew that experience was deceptive and that its "deception" could not be laid bare by the unsophisticated logos. Something else was requisite, a philosophical orientation or, as it was later termed, "logos harnessed to a method."

The logos of man did not formulate this method in a definitive form before 1636. It was then that René Descartes published his "Discours de la méthode."

Descartes was not the only proponent of the thesis of this work. Among his precursors were Thomas Hobbes, Giordano Bruno, and Francis Bacon. This thesis, witnessed in the illuminating achievements of Descartes' contemporaries Galileo and Harvey, may be summed up as follows: to broach experience, not in its most complex but in its simplest and most elementary components; to explore these by the methods of experimentation, that is, by the artful structuring of experience for preconceived goals; and to mensurate the resulting information in quantifying terms, that is, mathematically.

This, as I am sure you must appreciate, is essentially empiricism resurgent—but in a new and novel form. It is pluralism *de novo* and specialism *in statu nascendi.*

Bacon and Descartes were philosophers rather than scientists, and yet their respective works served to discredit rather than to advance philosophy. Thereafter, among the learned, the scientists outnumbered the philosophers, and nature which to the Greeks was, in itself, simple was in time dismembered and parceled out among a host of "natural scientists," workers in special disciplines.

This brings us to the threshold of the 18th century, the age in which modern medicine was born. It was signaled in the final overthrow of Galen's authority. The assault on this authority began more than 150 years before, in the first half of the 16th century, with Paracelsus as its leader. It was consolidated in the "Fabrica" of Vesalius (1538) and in the "Motu Cordis" of Harvey (1628).

The foundation of modern medicine rests on the study of anatomy, the detailed and correct exposition of the structure of the human body. This pursuit, making common the practice of dissection and defining the norms of the body's organs, in time made possible the study of gross pathology. Autopsies, prosections to demonstrate the anatomic concomitants of disease, became commonplace. The science of pathological anatomy was founded on the monumental labors of Giovanni Battista Morgagni,

whose "De sedibus et causis morborum per anatomen indagatis" was published in 1761. But note the title of Morgagni's work. It was not merely *de sedibus*, the seat, but also *de causis*, the causes of disease. This points to new developments, to the anatomically oriented nosology and nosography. The linking of symptoms to organic changes, and by indirection to altered function, could not but yield many refinements in diagnosis, prognosis, and therapy. Such was indeed the result. What began as gross pathology was advanced and developed by a host of ingenious men and yielded in time (but before Virchow established the science of cellular pathology) subtle and penetrating insight into the morbid processes of the diseases affecting the major systems. In this connection, Richard Bright, William Stokes, James Parkinson, John Cheyne, Theophile Laennec, and others, by their singular knowledge and expertness, became in effect the prototypes of the modern clinical specialist.

As the medical historian Arturo Castiglioni affirms, "At the end of the 17th century, when the cooperation of medicine and the natural sciences was being emphasized, we already see outlines of the essential features of the great structure of experimental science. Already various specialties began to be detached from the main trunk. . . . Here we have an extensive preparation for modern medicine."

Recently I wrote an analysis of the history of specialism entitled "The Birth and Death of Specialties." (*J. A. M. A.* 167:2056–2061 [Aug. 23] 1958). I will repeat but little of the argument presented there, for I would rather take a closer look at specialism itself and speculate on its future and the bearing it may have on medical education.

It is of interest that medical specialism was first pursued mainly by the laity. The lens coucher, tooth extractor, lithotomist, bone setter, midwife, masseur, and barber surgeon were the specialists of the middle ages and later. It is a significant archaism that in England the surgeon is addressed as "mister" rather than "doctor" and that it was said of John Hunter that "he made gentlemen out of surgeons." As can be gathered by this catalogue of specialists, they, the specialists, were the doers, the operators. They were, as so many are today, technicians, men skilled in crafts rather than knowledgeable in theories.

It is of interest, too, how much of specialization is dependent on instruments and instrumentation. Historically, many specialties were literally made possible only when the effective tool came to hand. The classic example is the ophthalmoscope. Another is the roentgen tube. It is not too much to postulate that the tool made the specialist no less than the specialist the tool.

Components of Medicine

Thus, in the broadest sense, medicine embraces two major components, a *gnosis* and a *techné*. *Gnosis* is medicine's knowledge and understanding of man as a living creature surrounded by many and varied realities. *Techné* embraces all the operational modalities used by the physician in his efforts to benefit man.

During the past 150 years, the *techné* of medicine has tended to overshadow and to outstrip its *gnosis*, even though the latter has grown immensely. This, I am persuaded, is the result of two contributing factors: the phenomenal growth of the technological sciences in general and the vast and ever increasing demand for what I term episodic medicine.

The practice of medicine, as I see it, is divisible into two major categories: episodic and maintenance. Episodic medicine, as the term implies, is the medicine practiced in emergency situations, best exemplified in the surgeon's work. Maintenance medicine is devoted to fostering the everyday well-being of the individual. It is best represented in the practices of the pediatrician and the nonspecialist internist.

Episodic medicine is primarily and predominantly the realm of the specialist, and he in turn is the master of medical *techné*. Maintenance medicine calls for less *techné* and for a deeper indoctrination in the *gnosis* of medicine.

Implicit in the above definition of *gnosis* are the monistic overtones of Hippocratic medicine, for I identify modern specialism with the pluralism of the empiricists. But specialism is not thereby disparaged. That were indeed a folly, if for no other reason than that, as I have indicated, present-day living is beset with numerous emergency episodes, not all of them surgical in character. My intention is not to belittle the *techné* of medicine but to plead for a better and wider comprehension of the *gnosis* of medicine, both among those who practice episodic and among those who practice maintenance medicine.

Today, however, all the emphasis is on *techné*. Even our undergraduates in medicine receive their instruction as a sequence of specialty parcels. In most medical schools the current curriculum is a recapitulation in four years of the historical development of medicine during the past 400 years. The result is that the graduate comes forth schooled in the thought that the practice of medicine consists of discovering what the patient has and what is good for it. A really basic comprehension of biology is rarely encountered. Chemistry, being a must, is fairly well known, but general physiology is not. Ask the young graduate to describe what effect exercise has on lymph circulation and tissue nutrition and to speculate on what bearing this may have on metabolism, and you are likely to have a blank stare for an answer. Ecology will most likely be a familiar term, but not its full significance to the understanding of the patient's history. Of medical history the young graduate is likely to be blissfully ignorant. To sum it up, in education, as in practice, the accent appears to be on *techné*, while the need is for *gnosis*.

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Future of Specialism

I have said that specialism is here to stay, but not that it will stay the same. Specialism is, in effect, confronted by the challenge of its own technological instrumentalities. I cannot envision automation taking over the surgeon's work, but it may well take over that of his anesthetist. Certain it is that, increasingly, the diagnostic laboratories with their multiplicity of apparatus are taking over more of the tasks in the exercise of judgment and discrimination formerly performed by the specialists. I am also convinced that an even greater challenge to specialism lies in the deepening penetration of the physiological sciences into the mysteries of normal function. I need only call in witness the effects which the science of nutrition has had on a host of specialties.

Thus far I have treated of specialism as a phase of the growth and development of medical knowledge. But specialism has a social as well as a scientific aspect. There are, in other words, specialties and specialists, and the derivation of the practitioner-specialist may be "a thing apart" from the specialty he practices. Historically, the specialty, as a compact cluster of particular knowledge, antedated the advent of the practitioner-specialist. Laennec knew a great deal about chest diseases, but he was not a lung specialist. Richard Bright knew more than any of his contemporaries of the chronic disorders of the kidney, but he was not a urologist. William Stokes of Dublin wrote treatises both on diseases of the chest and on diseases of the heart and aorta, but he was first and foremost a clinician and not a specialist.

Granted there was not too much to be known in any of the specialty fields, so that any gifted and studious physician could be both expert in one department of medicine and competent in the rest. But that is precisely the point I wish to underscore. When, in the early stages of specialism, a physician became a specialist, he more than likely had come to his specialty through years of work and experience as a generalist. Such, of course, is not currently the case. Men set out to be specialists before they have completed their undergraduate training. Despite the seemingly reasonable plea that medical knowledge is too vast and too complex for any one mind to encompass it, and, hence, specialization is inescapable, I am persuaded that much specialization is motivated by less cogent and more worldly reasons. I would feel more reassured if I saw the neophyte specialist cramming himself to the limit of his capacity with the knowledge basic to a sound comprehension of medicine.

It is certain that the specialist has operated in what may be called a scarcity market. It is not likely to continue as such indefinitely. Specialism in its social and economic aspects must sooner or later come under the sway of social and economic determinants. It is likely to be less rewarding economically and to offer less prestige. This, too, may lead to a coalescence of some of the specialties into larger and more inclusive divisions of clinical medicine.

Though medicine has prospered enormously during the past 200 years, in an era of increased and refined specialization, one is not warranted in envisaging the future of medicine in a like perspective. I think rather that, while specialism will remain an important division of medical service, medical science per se and medical service perforce will undergo a revolutionary change. The change will be the result of the maturation of the knowledge and intelligence to be derived from the disciplines of physiology and ecology.

Ecology, I am certain, does not call for detailed definition. However, physiological medicine does; it is too easily confused with the physiology of the smoked drum variety. Physiological medicine is, in my definition, the operations of the organism set in its environment. Exemplary of physiological medicine is the magnificent discipline of nutrition—magnificent in the true sense of that term, "doing great deeds" or characterized by "greatness of achievement." To the credit of the science of nutrition stands the true conquest of pellagra, beriberi, rickets, scurvy, chlorosis, and a host of other disorders and diseases.

Within the ambit of physiological medicine lie a multitude of factors which are requisite to the optimal operations of the living organism. And there is, as you must perceive, a most intimate interrelationship between ecology and physiological medicine.

Conclusions

I have ventured some prognostications as to the future of medicine. These prognostications are neither as wild nor as hazardous as they may appear to be. It lies inherent in the developmental process of every science that after a period of wild and florid growth it matures into a consistent and meaningful discipline, compact in principle and pervasive in application. It is this I am sure Whitehead meant when he said that the last thing any science discerns is what it is all about.

Medicine has experienced 400 years of specialism, in the last 150 to a most intensive degree. We are now, I am persuaded, on the verge of that stage wherein the emergent unifying principles of the biological sciences, reflected notably in the disciplines of physiology and ecology, promise to make of medicine a consistent and meaningful discipline compact in principle and pervasive in application. This matured medicine, enriched in *gnosis*, will subserve and enlarge the operations of maintenance medicine and will correspondingly make less requisite those of episodic medicine. I respectfully submit that it would be well for those charged with the education and training of our future physicians to pay heed, to prepare, and to foster this promise of the future.

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THE CHALLENGE OF SPECIALIZATION IN BASIC MEDICAL SCIENCE

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Successful scientific investigation has thrived with the motto "divide and conquer." Only by dividing and subdividing major problems into manageable parts has it been possible to obtain definitive data which, when interpreted, could be resynthesized to answer the original question. Overwhelming testimony provided by the history of science has affirmed this fundamental technique, but at the same time there has arisen a criticism broadly recognized as a limitation of general discovery which is apparantly the product of the classic strategy. We need only recall the trenchant analysis of Slawkenbergius' treatise on noses to sense the caricature of specialization in the public mind. The basic issue, then, is not whether specialization has been or will continue to be necessary to the advance of scientific knowledge but, rather, whether there is some feature implicit in the system which has been detrimental to the greater good.

Specialization Leads to Generalization

Whitehead has stated, "The subjects pursued for the sake of a general education are special subjects specially studied; and . . . one of the ways of encouraging general mental activity is to foster special devotion." We should expect, however, that specialized investigation not only would lead to a detailed and precise definition of a phenomenon but, by nature of its completeness, should be developed into profound general truths that stand antithetically to the rigid and restricted concept of "specialization." "The essence of knowledge is generalization" (Whitehead).

The boundaries between the subdivisions of science are artificial and should largely disappear as a deeper insight into fundamental phenomena is acquired. The sterile cul-de-sacs of research are not implicit in the method but are human—an unwillingness on the part of the investigator to interpret broadly and imaginatively. Who could label Claude Bernard a specialist on electrolytes? Yet it was through a detailed examination of these chemical minutiae that he formulated one of the few existing basic "laws" of biology, that the existence and constancy of the physicochemical properties of the body fluids is a necessary condition for the evolution of free and independent life. Quite clearly, there is a point in investigation where the vertical pursuit suddenly broadens into a wider understanding, and it is at this juncture that the gifted few find general expression for hitherto unknown relationships.

The question must be posed as to whether something has transformed the boldness of spirit which should be the heart of research into a timid reluctance to explain new observations outside conventional dogmas. Is there an increasing "lack of discrimination between the details which are now irrelevant and the main principles which urge forward human existence"? I believe that, unfortunately, both these questions must be answered in the affirmative and that the problems arise simultaneously with an attitude accompanying increasing specialization. There has resulted a changing pattern of specialization which is both the product of the times and an instrument in perpetuating its own weakest points.

One of the challenges of graduate education in the basic sciences is that of providing the student with sufficient familiarity in a variety of topics so that he can range effectively over accepted boundaries without the stigma of dilettantism yet be sufficiently well informed in at least one field to become expert in it. Many of the most exciting problems in modern biology and medicine lie in the "in-between" areas, and their solution is more likely to come from the man whose training and outlook are broad. I submit that both training and outlook are of equal importance.

The following apology quoted from the first paragraph of a recent scientific paper emphasizes the conservative scholar's preoccupation with the boundaries of his own range of knowledge. "It carries me out of my field, and off of ground on which I feel secure; it may prove again only that a little knowledge is a dangerous thing." Erasmus, sensing this problem long ago, offered the following advice suggesting that folly might constitute the necessary ingredient for a renaissance: "For there are two main obstacles to the knowledge of things, modesty that casts a mist before the understanding, and fear that, having fancied a danger, dissuades us from the attempt. But from these folly sufficiently frees us, and few there are that rightly understand of what great advantage it is to blush at nothing and attempt everything."

Medicine began to acquire stature as a science when, instead of knowledge appearing as a by-product of the solution of immediate problems, deliberate efforts were made toward the enlargement of knowledge by test cases selected toward that end. In general, the development was from common-sense knowledge, but its growth depended on

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the assumption that there was more to know than the context admitted and that there were assured ways the unknown could be discovered. It has been said by Hawkins, "Nature is not directly amenable to the forms which an artist or scientist may choose or invent. Changes of style may open up new areas of subjects, or the concern with new subjects may force the development of new styles." One of the lasting tributes to the genius of the great classic figures in medical science is the skill they displayed for inventing not only new techniques but often whole new concepts in fields quite outside their own area of specialized interest when the solution of the problem at hand demanded it. They set an enviable record by their contributions to the sister sciences when the biological problem could not be solved readily by the application of physical laws known at the time. Physics is richer for the contribution of Helmholtz to the theory of sound, for the precise experimental definition of the laws of fluid flow by Poiseuille, for a quantitative description of the elasticity of solids by Young, for the first statement of the first law of thermodynamics by Mayer. Even the founder of the *American Journal of Mineralogy*, Archibald Bruce, was a physician. There may have been humility, but the record would not suggest any timid reluctance on the part of these men to advance into areas far out of their field, work toward and arrive at a solution, then return with their new knowledge to the biological problem which stimulated their departure. But the climate has changed. It is almost unthinkable now that a medical scientist would dare to risk creative activity in any other area of the life sciences, let alone in the physical sciences. Indeed, there is even some reluctance to learn what is currently known in these disciplines, let alone what is unknown. Rather, the solution would seem now to be as simple as adding one more "specialist" in the personnel category of a research grant application and congratulating oneself not only that the "team" is nearing completion but also that medical educators will be satisfied the approach is "modern" because it shows evidence of "multidisciplinary integration."

In attempting to bridge the gaps created by established, specialized interests, one must be careful that a new specialty does not arise just to fill the gap. Such specialties start with a credo affirming virtue in breadth but quickly mature with horizons confined to the limits of the gap.

Biophysical Feedback

The biological scientist is struggling with increased vigor to learn and to apply to living systems knowledge from the physical and mathematical sciences. The importance of this association is widely recognized and appreciated, but the significance to the broader aspect of biological thought must not be lost from sight. Any direct imitation of the physical sciences must be accepted as a sign of immaturity. The 17th century was an instructive period, filled with enthusiasm for the conversion of medicine to chemistry and physics. The science of mechanics was in its heyday, and it contributed immensely to the understanding of the circulation recently discovered by Harvey. Still, the era ended with disillusion and a cry for the return to Nature. The balance had been lost—too much was expected to follow from imitation, a lesson confirmed by the failure of Linnaeus' attempt to classify diseases according to his scheme.

There is every confidence that living systems will be described ultimately in a mechanistic rationale, but it is also not unlikely that certain unique features in living systems will escape known concepts developed exclusively around phenomena of the inanimate world. There is a difference between returning to the physical sciences for basic concepts on the one hand and becoming slavishly dependent on the other. It is still likely that certain fundamental concepts in biology properly fed back into physics will provide suggestions of mutual advantage. This must have been what Sullivan, the mathematician and physicist, had in mind when he said: "The great intellectual conquests of the near future, the next great step forward in the development of human consciousness, may be expected to come from biology." For analytical purposes the parts and processes are legitimately treated in isolation and within the established concepts of physics and chemistry, but too often sight is lost of the fundamental role of organization in biology—that the unified whole is more than the sum of the parts—aptly put by Muller: "To say for example, that a man is made up of certain chemical elements is a satisfactory description only for those who intend to use him for fertilizer."

One of the great weaknesses in biology is its paucity of "laws." Even bad laws are useful, for they provide a framework on which to construct. Formalization is urgently needed, but imitative response is not enough. Unfortunately, biology has yet to find its Newton.

If we accept that the mental attributes of the contemporary scientist are equal to those of his ancestors, then there remain several factors which provide significant barriers to productive generalization. The enormous complexity of current scientific knowledge is a formidable obstacle, and no one would disagree that it is too much to hope that any mere mortal could master even a segment. In spite of this, it seems to me there is reason for optimism, for inevitably the final expression of great generalities tends to be disarmingly simple.

A second deterrent is one for which I feel specialization is directly culpable, although the vanity of man is a necessary ingredient. It may also be that the social structure which has bred "organization man" provides a milieu in which the inherent

weaknesses of specialization flourish. A caste system in science is not new, but I believe that more recently there have increased two unfortunate products that weaken the basic goal of research. These are scientific snobbery and the establishment of cadres of secrecy. The former may be a part of the social constitution of man and the latter, in part, a consequence of poor communication because of the development of jargon, but both create an atmosphere in which worthy or relevant information can be considered to evolve only from the next "higher" science. The chemist G. N. Lewis has beautifully described the situation as follows: "The man whose chief apparatus is the differential equation looks down upon one who uses the galvanometer, and he in turn upon those who putter about with sticky and smelly things in test tubes. But all of these, and most biologists too, join together in their contempt for the pariah who, not through a glass darkly, but with keen unaided vision, observes the massing of a thundercloud on the horizon, the petal as it unfolds, or the swarming of a hive of bees. And yet sometimes I think that our laboratories are but little earth-works which men build about themselves, and whose puny tops too often conceal from view the Olympian heights; that we who work in these laboratories are but skilled artisans compared with the man who is able to observe, to draw accurate deductions from the world about him."

Charity and an appreciation for good science from all sources is less apparent. We need a realization that pedestrian physicochemical measurements on a blood protein are neither more sophisticated nor more fundamental to the advance of medical knowledge than an accurate description of a new syndrome arrived at through patient observation at the bedside. No one is so omniscient to foresee where the missing links for a rational description of the fundamental truths of life will appear. To avoid intellectual segregation is difficult at best, but to deprecate knowledge from any source, deliberately, betrays an unforgivable provincialism. Modern specialization, fostering security in a tight little compartment, tends to reduce the scientist to a petty role, but it is my contention that the destructive forces concerned are primarily social and psychological, not intellectual. The specialist becomes a sharp critic of those who threaten his domain, and the would-be pioneer tends to be recast as an intruder. Rather than risk derision for venturesomeness the specialist takes refuge in his own compartment—thus creating a self-perpetuating scheme.

Conclusions

An objective of graduate education in the basic medical sciences is to provide sufficient training in the physical and life sciences that the student can work competently and confidently with the concepts and techniques fundamental to a study of mechanisms of all life phenomena, irrespective of specialty. The challenge is to add to this an intensive period of study and investigation on a particular problem without sacrificing breadth of outlook. The attitude of his teachers is the single most important factor toward this end.

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HAZARDS IN PLURAL BIRTH.—The chances of being born alive and of surviving the first year of life are distinctly less for children in plural births than for the single-born. Furthermore, the hazards are greater for triplets than for twins and greater for quadruplets than for triplets; the survival of a set of quadruplets is a rare event. Plural births account for only 2% of all births in the United States but are responsible for about 6% of the fetal deaths (still-births of 20 or more weeks of gestation) and for nearly 10% of all infant deaths. . . . The fetal death rate among twins in the United States in 1956 was 43.6 per 1,000 born alive or dying during the fetal period, compared with a rate of 15.6 per 1,000 for the single-born; for other plural deliveries the corresponding rate was 80.6. Data available for twins show a particularly high fetal mortality among those born to very young mothers and to mothers at ages 45 and over, but even those born to mothers in the age range 20-44 years experience a higher fetal death rate than the single-born. . . . Whether or not a mother has had children previously is also a factor in the mortality experience of infants born in plural sets. A recent study in Iowa showed that both the fetal mortality and the neonatal death rate (mortality in the first four weeks of life) generally decreased with increase in parity of the mother. . . . Deaths ascribed to prematurity account for about half of all neonatal deaths among children in plural births, a rate approximately 9 times that for single births. . . . Irrespective of birth weight, both fetal and neonatal death rates are higher for the second-born of a twin set than for the one born first. Much of the difference is attributable to the disparity in mortality from birth injuries and postnatal asphyxia. Identical twins experience somewhat higher neonatal death rates than fraternal twins.—Hazards in Plural Birth, *Statistical Bulletin of the Metropolitan Life Insurance Company*, November, 1958.

THE EFFECT OF SPECIALIZATION ON GRADUATE EDUCATION IN SURGERY

Herman E. Pearse, M.D., Rochester, N. Y.

Specialization is so widespread that it permeates every phase of our society and has resulted in many of the material and scientific advances in recent years. Only when specialization is premature or is dissociated from the whole does it have an adverse effect.[1] This is as true of the mechanic who tightens one bolt on an assembly line as it is of the physician who gazes into only one orifice of the body. Such restricted specialization permits a rapid acquisition of the skill necessary to perform the limited task, so there is no need for the laborious and time-consuming process of acquiring an understanding of its integration. In former years the position of a specialist was attained only by superior intellect and experience directing observation or experiment to increase medical knowledge. This authoritative position attracted students who came to learn from the master. In the United States Halsted [2] formalized this relationship by creating what we now call the residency system of training. Soon after, Mall implemented full-time clinical training.[3] These changes have had a profound effect on subsequent medical education.

Halsted and others fostered the development of special fields in surgery. This was accelerated by World War I, especially in the areas of orthopedic and plastic surgery. Soon after, the subspecialties of orthopedics, urology, neurosurgery, plastic surgery, otolaryngology, and ophthalmology were well developed, with residents in training, at Johns Hopkins University School of Medicine. Specialized residency training was initiated in other teaching institutions and expanded rapidly. After World War II it spread to many nonteaching hospitals so that specialization was put on a production line basis by establishment of credit for training and the award of a certificate. This rapid increase in specialists has made a great change in the practice of medicine.

There are many ways to explore the effects of increased specialization. It was decided to examine only the educational changes because the way special skills are acquired will influence how they are practiced. To make this study more specific it was limited to surgery, with our teaching hospital as an example, and it was restricted to the period 1927-1928 to 1957-1958, which is the period of my tenure at that institution.

The Strong Memorial Hospital, Rochester, N. Y., is owned and operated for teaching by the University of Rochester. When it opened in 1925, there were 246 beds, of which only 26 were for private patients. In 1936, a private floor of 14 beds was added and semiprivate patients were admitted to the wards with the understanding that they would be used for teaching. In 1941 a private wing was built, and in 1949 a psychiatric clinic was added. At present there are 257 semiprivate and ward, 128 private, and 74 psychiatric beds, a total of 459. The Rochester Municipal Hospital is owned by the city of Rochester but is operated by the university under contract. Its building is a part of the medical center, and the two hospitals are operated as one unit. In 1925, the Rochester Municipal Hospital had 209 beds, which were increased to 321 during the depression (1936) and now total 302. Thus, there are a total of 761 beds, excluding 41 bassinets, in the two hospitals which constitute the basic teaching unit of the medical school.

During the period after World War II so many of our men required completion of their training that it was necessary to use other clinical facilities. Experiments in assigning residents to "affiliated" hospitals were tried. Some of these hospitals were outside the city, in Clifton Springs, Ithaca, Canandaigua and Batavia, N. Y., and in Bradford, Pa. For various reasons all of these have been discontinued except for the Veterans Administration Hospital (257 beds) at Batavia, N. Y. At the same time affiliations were made with hospitals in Rochester, N. Y. These have now narrowed down to a cooperative, coordinated program for the first two years of "general training in surgery" with the Genesee Hospital (252 beds) and the Highland Hospital (242 beds), both of which are fully accredited, four-year, surgical training centers having their own interns and third-year and fourth-year residents. This pooling of clinical resources has given a broader experience than could be offered by any one of the hospitals alone. The combined bed capacity is 1,512, and experience is given in community, teaching, and government hospitals.

In subsequent discussion, the size of the resident staff at the Strong Memorial and Rochester Municipal hospitals is always given as a corrected figure which represents only the residents working in those two hospitals. Any men assigned elsewhere have been subtracted from the total. Data are tabulated by academic years beginning July 1, but for brevity the nomenclature for fiscal years is used. Thus, 1957-1958 becomes 1958.

During the 30 years covered in this study, profound changes have so altered graduate medical education that it has become increasingly difficult

From the Department of Surgery, University of Rochester School of Medicine and Dentistry.

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for educators to achieve the level of competence which they desire for their students. Some of the factors which have caused these changes are more rigid definition of the specialties, the creation of certifying boards designed to evaluate competence but often dictating the educational experience leading to it, the increased regulation of teaching hospitals by medical and surgical societies, the impact of medical insurance which has depleted the wards of the teaching hospitals, and, finally, the disruption of education by two wars and obligatory military duty in peacetime. An effort will be made to analyze the effect of these on our teaching hospital.

played by general surgery and the specialties is related to the total. This shows how the subspecialties were hit hard during the war and rebounded after it. But it is evident also that as the wave of postwar trainees began to subside it did not return to its former level due to the requirements of certifying boards. At first the cost of this increased staff was borne by veterans' benefits, but now it must be paid by the institution, which creates a heavy expense despite inadequate salaries.

It is desirable to relate these changes to activity or experience. This can be done by using bed capacity, admissions, or patient days, but in surgery

TABLE 1.—*Residents for 1928-1958 in General Surgery and Specialties, with Total Number of Operations and Operations Done per Member of Resident Staff*

Yr.	General Surgery Residents, No.	A.R. General Surgery, No.*	Residents in Subspecialties, No.							Total No. of Residents			Operations, No.†	Operations per Resident, No.
			Oral	Orthopedic	Genitourinary	Eye	Nose and Throat	Neurosurgery	Plastic	General Surgery	Subspecialties	Both		
1928	1	4								5		5	2,872	574
1929	1	4								5		5	3,181	636
1930	1	4								5		5	3,861	772
1931	1	5								6		6		
1932	1	5								6		6	4,832	805
1933	1	5	1	1	1	1	2	1		6	7	13	4,895	377
1934	1	5	1	1	1	2	2	1		6	8	14	4,143	296
1935	1	5	1	1	1	2	2	2		6	9	15	4,555	304
1936	1	5	1	1	1	2	2	2		6	9	15	4,705	314
1937	1	5		2	2	2	2	1		6	9	15	4,832	322
1938	1	5	1	2	1	2	2	1		6	9	15	4,879	325
1939	1	5	2	2	2	2	2	1		6	11	17	5,057	297
1940	1	5	2	1	2	2	2	1		6	10	16	5,084	318
1941	1	7	2	1	2	2	2	1		8	10	18	5,349	297
1942	1	7	1	1	2	2	2	1		8	9	17	6,100	359
1943	2	7	1	1	2	2	2	2	1	9	11	20	5,520	276
1944	1	6	1	1	2	1	1	1		7	7	14	5,256	376
1945	1	6	1	1	1					7	3	10	5,205	521
1946	1	4	1	1	2	2		1		12	11	23	5,783	251
		7‡		1		1	2							
1947	2	9	1	3	3	2	4	2		11	15	26	5,423	209
1948	1	11	2	2	2	3	4	1	1	12	15	27	6,861	254
1949	2	10	1	5	2	2	4	1	2	12	17	29	7,086	244
1950	2	11	1	6	3	2	3	1	1	13	17	30	6,880	229
1951	2	10	1	5	3	2	3	1	1	12	16	28	6,980	249
1952	2	10	1	4	3	2	2		1	12	13	25	8,002	320
1953	2	11	2	4	3	2			2	13	13	26	7,337	282
1954	2	12	1	4	4	2	2		1	14	14	28	7,345	262
1955	2	12	3	5	2	2	1			14	13	27	7,079	262
1956	2	12	3	6	3	1	2		1	14	16	30	7,544	251
1957	2	12	2	5	3	3	2	1	1	14	17	31	7,376	238
1958	2	12	2	6	3	3	2	1	2	14	19	33	7,277	221

* Includes 1 laboratory A.R.

† Some gynecologic operations included through 1933 only.

‡ Additional men returning during 1946.

Growth of Specialized Training

Many members of our original faculty had been at Johns Hopkins University, so it was natural that heads of each special division of surgery should be appointed. Specialization did not extend to the resident staff, for in the beginning the general surgical residents were responsible for all cases. This was not satisfactory to those in charge of the special divisions, for they wanted their own graduate students. In 1933, residents were appointed in the subspecialties of surgery, and since that time their number has steadily increased. This is shown in table 1 and illustrated in figure 1, where the part

operations performed is probably the best index. In figure 2 the increase in operations is plotted against the growth of the surgical resident staff. At the end of the war there were men from the classes of 1938 to 1945 who all returned at once to complete their training. This elevated the curve of resident staff above that for operations. Now, with the increase in specialty residents, this has recurred. If the operations performed are divided by the number of residents, a ratio of operations per resident is obtained which may be used as a general index of experience. This is shown in figure 3, where it is seen that this ratio was very high in the early days

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when the general surgical residents were responsible for all cases. It was 772:1 in 1930 when I was resident. This meant long hours and hard work but a golden opportunity for training. However, this situation was inadequate for the needs of the service, and a better balance was obtained when residents were appointed for the subspecialties. This dropped the ratio to about 300:1 where it remained until the war. Recently, it has dropped to 221:1 as more residents were added. It is difficult to evaluate what is required for a rewarding experience, and, certainly, no one factor can be used as a gauge. The minimum number of residents is easily arrived at because it is fixed by the board requirements of the various specialties. For example, if two, three, or four years of specialized training is stipulated then there must be two, three, or four men going up the ladder to the chief residency in these specialties. If general surgical training is required before specialization then there must be a man for every year specified. To these are added the number aiming at a career in general surgery, and by simple arith-

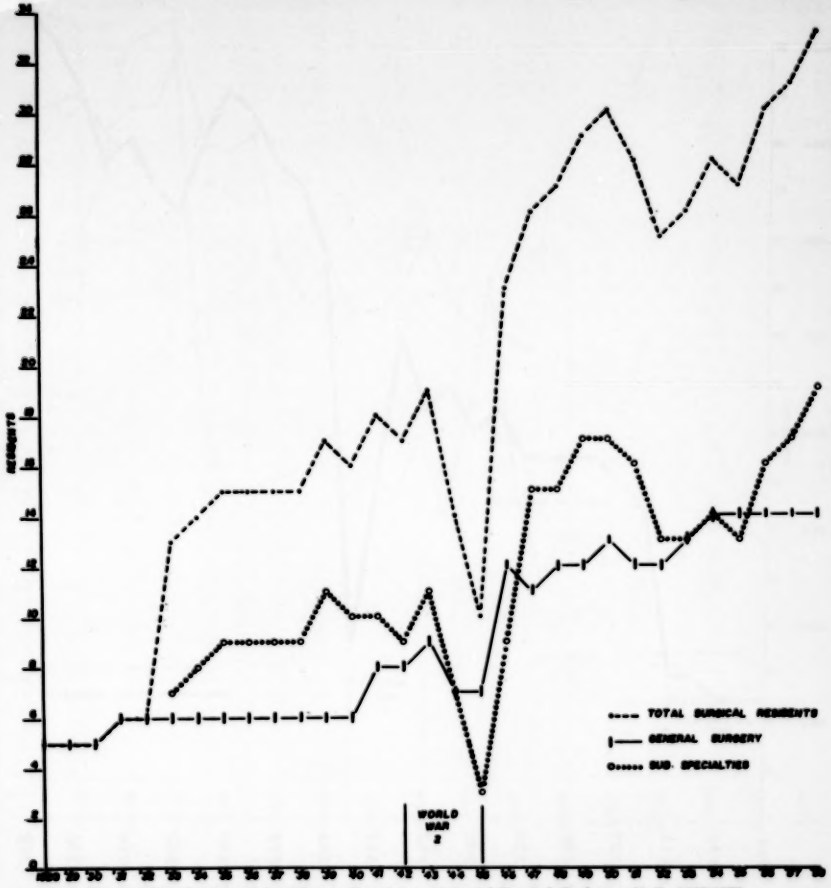

Fig. 1.—Growth of surgical resident staff at Strong Memorial Hospital, Rochester, N. Y., 1928-1958.

metic we arrive at a total. It should be emphasized that this is an educational, not a service, requirement, so it may bear little relation to clinical work load. Some insight is gained by a study of discharges (an index of patients treated), which is given

Increased Segregation of the Specialties

These figures give some insight into the growth of specialized training, but they fail to tell the whole story. The prewar subspecialty residents had extensive general training in surgery before they, alone,

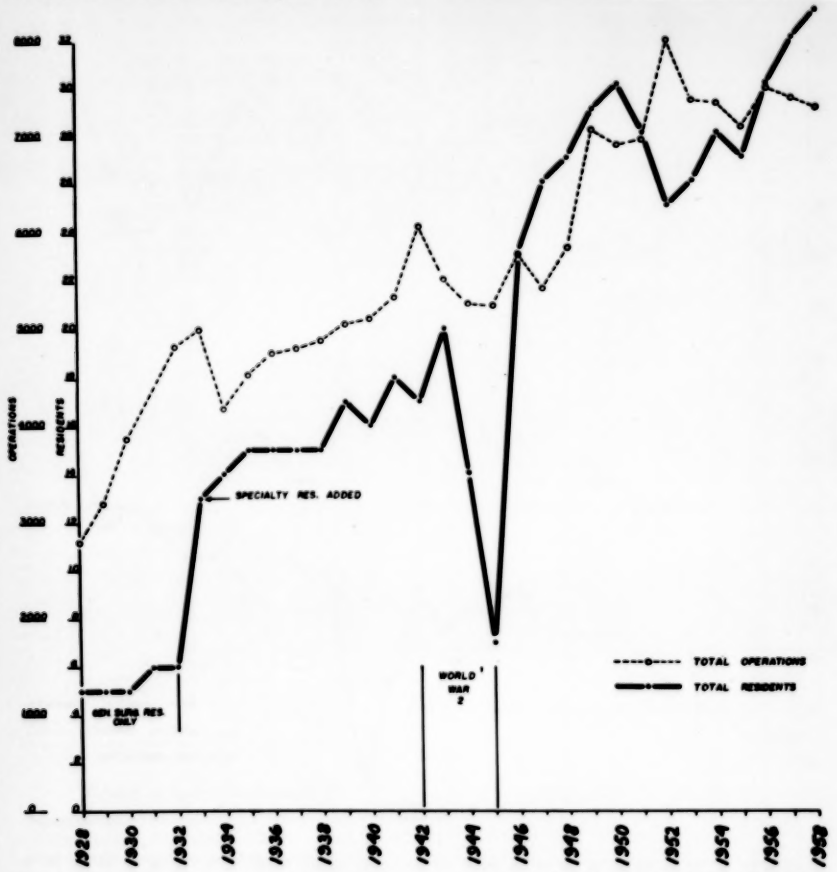

Fig. 2.—Relationship of increase in number of residents to operations performed at Strong Memorial Hospital, Rochester, N. Y., 1928-1958.

in table 2, and for patient days (an index of bed occupancy), shown in table 3. That these reflect differences in the type of work load is apparent by comparison of the percentages in the two tables for otolaryngology and orthopedics.

were in charge of their specialty. For example, in orthopedics four men had been senior or chief resident in general surgery prior to their appointment as orthopedic resident. There were few restrictive regulations, so that only proficiency in their field

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was the aim; with their surgical experience this was rapidly acquired. Patients of all specialties were admitted to the 32-bed wards which were designed with a four-bed cubicle as the largest unit. Interns were assigned in charge of these floors, with students as the clinical clerks. This gave a cohesive, smoothly functioning service for clinical care and teaching. But World War II changed that.

The certifying boards were well established in the decade after 1930, but they had not assumed their present importance. The armed services chose to use board certification as the yardstick for specialized assignments which carried higher rank and more rapid promotion. Those who did not have certification observed this, and on their return they unanimously said "I want my boards." Meanwhile the boards defined residency training as the acceptable way to competence. Preceptorial training was largely abandoned. The period of subspecialty training was lengthened. This increased the number of specialty residents who formed a team and tended to restrict their activity and interest to their own field, splitting the service into several separate groups. But the interns and students were still assigned to the surgical floors where all patients were admitted. Now they had to deal with many

Fig. 3.—Ratio of operations per resident at Strong Memorial Hospital, Rochester, N. Y., 1928-1958.

more residents who were usually concerned with only a few of their patients. Sometimes a group of specialists would make rounds and find that the intern was not available and, therefore, would leave orders or initiate therapy. Multiply this by several

TABLE 2.—*Discharges from Surgical Services, Strong Memorial–Rochester Municipal Hospitals, 1951-1958*

Surgical Service	1951-1952	1952-1953	1953-1954	1954-1955	1955-1956	1956-1957	1957-1958	Total No.	Total %
General	2,878	2,769	2,879	2,989	3,172	3,070	2,942	20,677	41.7
Neurosurgery	339	339	377	380	385	422	451	2,693	5.4
Ear, nose, and throat	1,094	1,117	970	906	1,027	1,084	1,104	7,272	14.6
Eye	437	450	378	422	386	421	445	2,939	5.9
Plastic	317	321	392	357	375	390	417	2,449	5.0
Urology	806	835	803	816	880	810	706	5,656	11.4
Orthopedics	1,082	1,099	1,284	1,129	1,195	1,008	976	7,854	16.0

specialty groups, and it is easy to see that the interns were often in a state of confusion about what was happening on their floors. It was obvious that the interns must also be assigned to the special services in order to become a part of their teams. This really isolated the students on the floors, for they were completely dissociated from the house staff, their most intimate teachers. So they also were assigned to the specialty services. With everyone concerned attached to special groups, there was better coordination of patient care and teaching but more compartmentation of the surgical service. The next logical step in this process is the separation of beds and operating room facilities, which will complete the segregation of the specialties.

Few educators will advocate segregation and compartmentation of special areas of medical teaching. But all scientific, social, and economic trends are in the direction of specialization. The only way to resist is to ignore this, which would be out of step with the times. If specialized fields are taught, they must be taught well. To strengthen specialized teaching means appointing the best man obtainable to be in charge of the specialty, giving him associates, a budget, space, residents in training, and teaching time. If this is done, separate groups are created which splinter the field of surgery into compartments. The problem then becomes one of integrating these in patient care and teaching. This would be greatly helped if the certifying boards of the surgical specialties could agree on a period of general training in surgery which would include rotation through all specialties. Then at least all specialists would have some idea of what their colleagues were aiming at. But, in addition, experiments in coordinated medical care must be carried on in the teaching hospitals. For example, we are trying this in a "combined clinic" under the direction of the department of medicine but with all specialists available for cooperative management of the patient's problem. Such experimentation must be actively pursued if we are to find a way to avoid segregation of these many components in the face of separate interests and skills.

Regulation of Residency Training

The residency system of training was developed as a form of graduate surgical education. Halsted was intensely interested in extending the knowledge of surgery and so attracted superior graduate students. He shared with them his enthusiasm for research and improved clinical care. All the resources of the laboratory and clinic were at their disposal. After 1913, a full-time clinical staff was instituted, so there was less distraction from practice and the small attending staff was closely associated with the residents. This intellectually stimulating atmosphere developed outstanding surgeons, many of whom became eminent. The same type of environment was slow to spread. For example, in 1938, when the Society of University Surgeons was established with a condition of membership the stipulation that the candidate must have completed a university type of residency, there were 10 institutions in the founder's group. Others were soon added, but the total is now only 39 university hospitals. Yet the American College of Surgeons states, "By October 18, 1957, there were 1,520 acceptable programs in general surgery and the surgical specialties in 691 hospitals each approved by the College." This did not occur without turmoil, so it may be profitable to look at what has taken place.

The high priority given board certification by government agencies, courts, insurance companies, hospitals, and schools made it desirable. The economic and professional rewards were great so that the attainment of certification had a profound consequence on professional life. The certifying boards at first preferred and later required residency training as a prerequisite to examination. This led to a rush for residency training which could not possibly be met by the established training centers, for they were too few in number. On the other hand, the resident was reluctant to spend time in a hospital where he did not receive "credit," so "unapproved"

TABLE 3.—*Patient Days for Surgical Services, Strong Memorial–Rochester Municipal Hospitals, 1951-1958*

Surgical Service	1951-1952	1952-1953	1953-1954	1954-1955	1955-1956	1956-1957	1957-1958	Total No.	Total %
General	32,295	30,534	30,988	29,551	34,837	32,392	31,998	222,995	43.0
Neurosurgery	3,841	4,591	4,766	4,450	4,140	4,624	5,625	32,037	6.0
Ear, nose, and throat	3,133	3,062	2,903	2,892	3,044	3,555	3,602	22,161	4.2
Eye	3,673	4,094	3,341	3,038	3,272	3,849	3,875	25,742	5.0
Plastic	3,375	3,184	2,840	3,477	3,955	4,119	4,166	25,116	5.0
Urology	9,588	9,901	8,771	8,439	8,846	8,758	6,985	61,288	11.8
Orthopedics	19,436	20,021	20,589	17,333	18,828	17,804	15,539	129,540	25.0

hospitals had difficulty in filling their resident staff in spite of a large number who desired training. This led to pressure for "approval" and to the creation of residencies that did not remotely resemble the original system or, as Mulholland [4] puts it, "led to a modern mockery." The term "resident surgeon" lost its connotation.[5] This was not universal, and strenuous efforts were made to resist it by the uni-

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versity clinics and their faculty. The Conference Committee on Graduate Training in Surgery was founded in 1950 with representatives of the American Medical Association, the American College of Surgeons, and the American Board of Surgery to improve standards for residency training. The certifying boards tightened their rules and, as weaknesses developed, made more rules. Now the whole subject is hedged in by restrictive requirements,[6] all of which were honestly designed for improvement.

The original intent of residency training was the education of the surgeon. In its rapid expansion this was ignored by many, so corrective regulations were needed. This led to the basic difficulty of regulatory bodies invading the field of graduate surgical education despite the fact that they were not educational institutions. As stated previously,[6] "Residency training is not an exercise in manual dexterity, nor is it a trade school, but rather is graduate surgical education and, as such, belongs under the jurisdiction of the medical schools."

Impact of Medical Insurance

Medical insurance has had a catastrophic effect on residency training in surgery. If this appears to be too strong a statement, let us look at the facts.

The basic principle of the residency system is graded, progressive responsibility under supervision terminating with at least a year when the chief resident is largely responsible for the management and operations of the clinic patients. This is the crux of the method, for without it confidence, judgment, and technical skill are difficult to acquire. The resident in surgery can be carried far, but never finished, if only private patients are available. Yet in most university-owned teaching hospitals and in most private hospitals medical insurance has converted the clinic patients into private patients. The municipal, state, and federal hospitals have not been affected as much. Without clinic patients the basic requirement of graded responsibility for the residents cannot be met. But clinic patients do not pay the whole cost of their care, so a deficit is created. This may be paid by community or tax funds, but in a university-owned hospital it usually comes from endowment. In former years this deficit amounted to as much as $250,000 a year for the Strong Memorial Hospital, and this strained the budget in other areas of the university. Hospital insurance wiped out this deficit but in doing this cut the number of clinic patients who are so necessary for surgical teaching.

The increase in private patients in this teaching hospital has been shown [7] to correlate with the rise of Blue Cross in the community (fig. 4) and to be independent of the national income. In addition to hospital insurance by Blue Cross, there are medical indemnity insurance plans, workmen's compensation, state aid to crippled children, and some types of federal aid which add to the total effect of medical insurance. The decrease in clinic patients at the Strong Memorial Hospital is shown in figure 5, where it is seen that, in 1934, when Blue Cross began in Rochester and when semiprivate patients were admitted to the wards, the clinic patients accounted for 68% of the admissions. This dropped to 8% in 1948 in spite of resistance by the faculty, for this hospital is owned and operated for teaching. Without the 320 beds of the Rochester Municipal Hospital, which is an integral part of our medical center, we could not have maintained our standards of surgical training. Alarmed at this trend, we arranged that unassigned, unreferred patients with hospital insurance who could not pay a fee and did not want their own surgeon should be assigned to the wards as clinic patients. They were cared for by the resident surgeons under supervision. This raised the level of clinic patients to about 20% of the

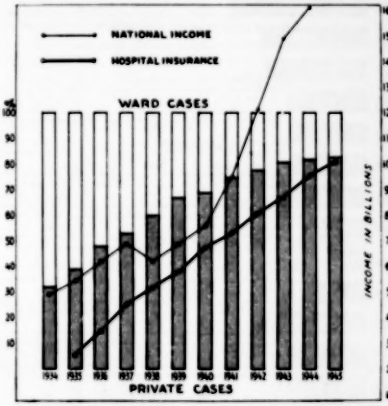

Fig. 4.—Relationship in Rochester, N. Y., area of increase in number of private patients to growth of hospital insurance and not to national income.[7]

admissions in 1950. But in this same year Blue Shield was started in Rochester. This surgical insurance provided a fee for the operation which injected a new complication and caused some patients to be removed from the group with hospital insurance who were being admitted to the clinic. The rise in Blue Shield surgical insurance is shown in figure 6, where it is seen that in seven years over two-thirds of the Rochester population has obtained this insurance. This and other insurance has reduced the total clinic admissions to 12% in 1958. In addition, there are 300 clinic beds in the municipal hospital.

What can we do? On the one hand the certifying boards have stipulated residency training as a prerequisite which has enlarged the resident staff,

while on the other hand hospital and surgical insurance has so depleted the wards of teaching and private hospitals that they no longer have an adequate number of clinic patients to train residents. It is a good thing we have a municipal hospital and an affiliation with a veterans' hospital. But this is only a reprieve. Medical educators and the surgical profession must face up to the fact that the great benefits of medical insurance, to them and to the public, cannot be permitted to wreck training for proficiency. We cannot afford to have a generation of poorly trained surgeons.

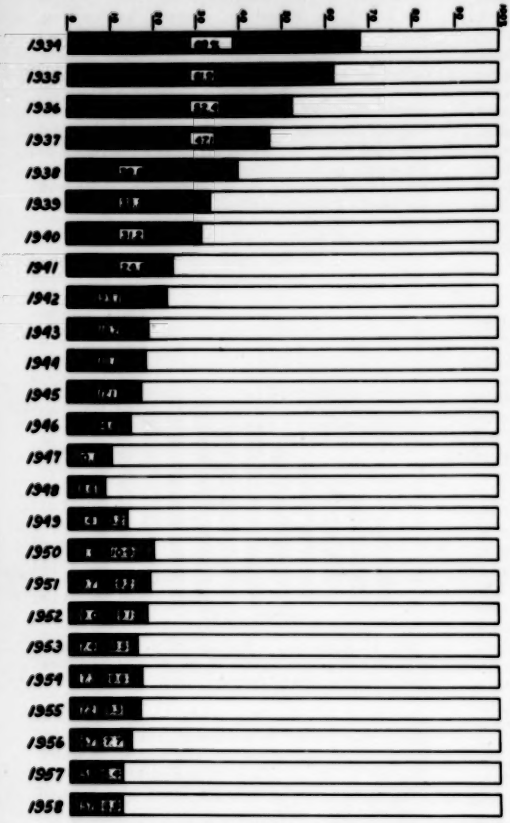

Fig. 5.—Decrease in number of clinic patients, Strong Memorial Hospital, Rochester, N. Y., 1934-1958 (black part of column=ward patients, crosshatching=semiprivate and unreferred patients with hospital insurance, and white=private and semiprivate patients).

Various expedients have been tried in order to combat this critical situation. Some medical centers have instituted group practice: the entire staff, senior and junior, are full-time, salaried, and practicing together as a group. This allows delegation of responsibility for care on the basis of medical need rather than financial standing. When the control of this is vested in the institution, some members of the staff complain that they are exploited. When the control resides in the surgical staff, where it belongs, it has been satisfactory. But to change an already existing arrangement of individual practice by a large full-time and part-time staff to one by a small, full-time, salaried group is complex and difficult—so much so that it is hard to visualize how it could be a universal answer. Another suggestion is to appoint the senior members of the resident staff to a position of junior attending surgeons who are licensed to practice and are approved for the care of insurance cases. This involves an exercise in semantics with the certifying boards, the insurance companies, and the public. The commonest expedient, at present, is to allow the resident to assume more responsibility in the operations on private patients. If this is carried to the point of lack of supervision by the responsible surgeon then it is dishonest, for the resident becomes a "shadow surgeon." Worse, it sets an example for a man, at an impressionable age, to ignore legal and ethical responsibility in order to attain a justifiable goal. Such a haphazard arrangement cannot be the permanent basis for a training program.

The straightforward approach is to have the residents licensed to practice and approved for the care of insurance patients. But when a fee is involved it becomes a bone of contention. This has blocked efforts to use insurance cases for residency training. In my opinion, these fees should be accredited to the surgical staff who have the ultimate responsibility for the care of all of the surgical patients. This staff should act as trustees of any such funds to decide on their disbursements. An unassigned, unreferred patient with surgical insurance who comes to a hospital is assigned to some member of the surgical staff who collects the fee. It follows that these fees are now the property of the members of the surgical staff and should remain so. If these patients were assigned to the resident staff who did the work it would be selfish not to allocate a part or all of the funds to improve the educational and economic conditions of the resi-

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dents. We felt that a special fund should be created by the surgical staff to be used for the benefit of the residents.

In 1952, this arrangement was started and a request was made to authorize the resident to care for patients with Blue Shield and workmen's compensation. When representatives of the county medical society heard of this they objected, for, they said, it would mean that the hospital was practicing medicine. It did no good to point out that the hospital had nothing to do with it and that control was vested in the surgical staff. The request was disallowed on the basis that it would lead to "socialized medicine."

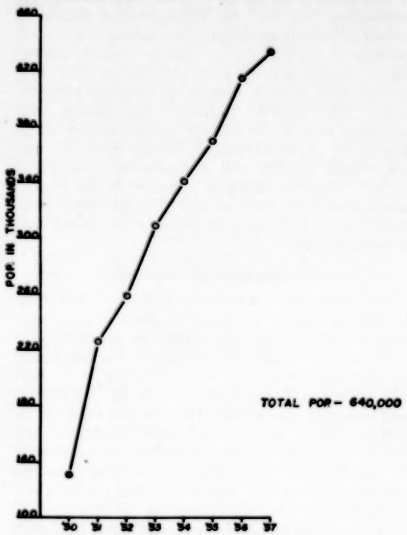

Fig. 6.—Blue Shield surgical membership in Rochester, N. Y., area, 1950-1957.

In New York state the corporate practice of medicine is illegal. This is a wise provision, for no one wants lay control of professional practice. But the medical society of the state of New York has gone beyond this by indicating that not only no hospital or institution but also no resident or intern shall have charge of Blue Shield patients. Now we must sign an affidavit on each Blue Shield form which reads: "I certify that I am not an intern or resident and that this is a true and correct statement for services which were personally rendered by me as attending physician."

This attitude completely ignores the need for training skilled surgeons. In an effort to prevent institutional practice, education has been handicapped. Unless something is done the public will suffer, for they will become the unsuspecting subjects of inadequately trained surgeons. We must exert all of our efforts to prevent this. Some way, somehow, we must find a way to retain the benefits of both medical insurance and the residency system of training. This is the challenge.

260 Crittenden Blvd.

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IATROGENIC DISEASES.—The term "iatrogenic" is a neologism which has apparently come to stay. It has been attributed to the late Sir Arthur Hurst who originally applied it to disorders induced in the patient by autosuggestion based on the physician's examination, manner or discussion. Its meaning has been extended to include any untoward incident resulting from medical or surgical treatment. . . . In spite of the great advances of medical science each new procedure or new drug seems to carry with it potential dangers. It therefore behooves every medical practitioner constantly to be on the alert for unexpected mishaps. Some may be due to lack of skill, some to lack of knowledge whilst others appear to be unavoidable. It is therefore important to be acquainted with the possible risks of each new or unfamiliar drug or procedure and to have at hand the means to counteract any emergencies which may arise. If risks can be anticipated it may be wise, in view of possible medico-legal repercussions, to warn the patient in advance. On the other hand, it is equally unwise to strike terror into the heart of a patient when risks are minimal.—W. G. Sears, M.D., Iatrogenic Emergencies, *The Practitioner*, April, 1959.

MAINTENANCE OF STANDARDS IN GRADUATE MEDICAL EDUCATION

Edward L. Turner, M.D., Chicago

Shortly before the middle of the 19th century, leaders in medicine evidenced increasing concern over the low standards of medical education and practice in the United States. During meetings of the New York State Medical Society [1] in 1844 and 1845, several resolutions dealing with medical education and licensure were introduced. Lively discussions followed; it was obvious that something should be done, but it was equally apparent that it would be impractical for one state alone to try to raise standards. It was subsequently suggested that this obstacle to improving standards might be obviated at a national medical convention, where the delegates from medical societies, medical colleges, and institutions of the several states might be persuaded to act in cooperation on this important matter. Therefore, the following resolution was introduced:

WHEREAS, it is believed that a National Convention would be conducive to the elevation of the standard of medical education in the United States; and

WHEREAS, there is no mode of accomplishing so desirable an object without concert of action on the part of the medical colleges, societies and institutions of all the states, therefore, be it

Resolved, that the New York State Medical Society earnestly recommends a National Convention of delegates from medical societies and colleges of the whole union to convene in the City of New York, on the first Tuesday in May, in the year 1846, for the purpose of adopting some concerted action on the subject set forth in the preamble.

Resolved, that a committee of three be appointed to carry the foregoing resolution into effect.

Although many expressed doubts regarding the possibility of such a venture, some considering it impractical or even "Utopian," the majority of the delegates were impressed with the importance of the objectives and the resolution was adopted. The National Medical Convention met in New York on the appointed day in May, 1846, and reconvened on May 5, 1847, in the Academy of National Sciences in Philadelphia. At that meeting the delegates heard the reports of the committees appointed at the New York meeting, one of which resulted in naming the organization the American Medical Association. It is a matter of more than passing interest to point out that 250 delegates attended this meeting, representing 28 states, 40 medical societies, and 28 medical colleges.

At this meeting resolutions were also adopted recommending certain standards of preliminary education for those who planned to study medicine. These resolutions, however, were adopted only after overcoming considerable opposition, such as is still encountered whenever elevation of standards is discussed. For instance, some members of the convention felt that the recommended standards would prevent from entering the medical profession persons of limited means "whose natural endowments would carry them to the highest rank, notwithstanding their inadequate preliminary preparation." The records indicate that during this argument one of the leading proponents for adoption of the standards stated, "Young men who had not mental energy and perseverance enough to comply with the standard proposed in the resolution, certainly had not enough to enable them to do justice to a profession as extensive, intricate and arduous as ours."

Director, Division of Scientific Activities, American Medical Association.

Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 8, 1959.

Development of Standards

The philosophy underlying efforts to cooperatively develop sound standards in medical education over a century ago was based on dissatisfaction with existing conditions. Leaders in the profession at that time recognized that the status of medical education was not in keeping with the knowledge and needs of the period. They were aware of the fact that many persons were being graduated into the ranks of the profession without possession of the background education and training essential and available at that period and that this was not in the best interests of the patients. The objectives of those concerned with the concerted effort that gave birth to the American Medical Association were, therefore, to make it possible to develop standards which would improve medical education to what it should have been in the setting of that period.

The concept of standards applicable to the education of the physician reaches far back into antiquity. Such standards are clearly implied in that portion of the Oath of Hippocrates [2] dealing with the physician's responsibility for teaching those seeking to enter the profession. Frederick II,[3] in the law which he promulgated in 1240 A. D. for the regulation of the practice of medicine in the Two Sicilies, under the jurisdiction of the School of Salerno, recognized that the physician must be an educated man. Standards of requirements for admission to the study of medicine were included along with those developed for both medical education and the privilege to practice. In fact, from many standpoints these high qualifications were of such a nature that only the most recent medical legislation has caught up with some of them.

It must be pointed out that the term standard has numerous connotations, which vary with the context. At least two of the possible interpretations are of importance in their application to the area of our concern during this Congress.

A standard may be interpreted, according to Webster,[4] as "something established for use as a rule or basis of comparison in measuring or judging capacity, quantity, content, extent, value or quality." When used in this manner, the concept of standard implies a more or less permanently fixed idea, such as an inch, a meter, a pound, a kilogram, or even the exact pattern of the practice of medicine in the "good old days." This utilization of the term conveys the concept of something which, once established, constitutes a permanent, fixed reference point. Such a concept of standard applied to education or training in medicine, or in any other field, becomes a hurdle to progress. It is, however, the interpretation of many of those living in the past and oblivious to or not in sympathy with the problems of today or the challenges that lie ahead.

A standard also, according to Webster, constitutes "something used by general agreement to determine whether or not a thing is as it should be," as a type, a model, or an example established by usage or a level or grade of excellence or attainment which is regarded as a goal or measure of adequacy.

Thus, we are confronted with two different concepts of the philosophy underlying standards: One deals with the establishment of clear-cut reference points to which everything must be adapted or standardized, and the other presents the concept of challenge to maintain a grade of excellence and attainment as a goal or measure of adequacy. This latter concept does not convey the idea of something fixed or unchanging but, rather, implies adaptation to change as a fundamental factor in the maintenance of standards. In other words, there is a vast difference between the concept of standards as applicable to a field, such as medical education and practice, and that of standardization, which in these days may rapidly relegate the concept of a fixed standard to obsolescence.

Hazards in Maintenance of Dynamic Standards

Efforts to develop concepts of dynamic standards in any field of education in today's rapidly changing setting are fraught with certain hazards. This is well illustrated by an incident which took place as long ago as April 4, 1909, when the Council on Medical Education voted to recommend a 4,100-hour program as "a working schedule for the medical curriculum."[5] The Council had consulted with over 100 leading medical educators of the day in the course of developing this suggested guide and specifically indicated that "it was the general opinion of those present that this schedule should not be made a hard and fast requirement with which all colleges should comply, and that strict uniformity of curricula among all colleges was undesirable." Here the Council was clearly indicating its concern that standards not be construed to imply standardization.

However, at their meeting on the next day, the Council reviewed these recommendations and concern was expressed by some that certain state examining boards might adopt the curriculum suggested by the Council as a fixed standard or guide and make it obligatory for medical colleges if their graduates were to be qualified for examination. To counteract any such inflexible interpretation, the Council adopted this resolution:

> WHEREAS, the object of the Council on Medical Education in appointing a Committee on Medical Curriculum was entirely educational and suggestive, and,
>
> WHEREAS, the impression prevails among medical teachers and members of the state boards that the Council is framing a curriculum for the purpose of having it serve as a standard to which medical schools must conform or be condemned by the state authorities as not in good standing, therefore, be it:
>
> *Resolved*, that every publication of a curriculum that hereafter may be made by the Council, its members, or its officers shall state explicitly that the Council does not consider it in the interest of true progress in education that any standard curriculum whatsoever shall be uniformly adopted by all medical colleges.

This historical note on the curriculum illustrates two important points, previously implied, which are associated with the development of standards in the field of graduate medical education. The first is associated with the danger of inflexibility of interpretation and the consequent misuse of the application of standards in any given period or setting. Second, in the rapidly changing world today standards in a field such as education and training must, in addition to being subject to some flexibility of interpretation, also be subject to constant reevaluation and readjustment, if they are to represent the the currently desirable goal, grade of excellence, or measure of adequacy.

Means of Adjustment of Standards

Recent years have witnessed increasing interest on the part of medical faculties, specialty boards, organized medicine, hospital administrators, and licensing bodies in the field of graduate medical education. Except for a few outstanding situations, relatively little interest in this field of education was manifested during the first decade of this century by others than the leading clinical teachers and those young physicians seeking additional experience.

In response to an increasingly obvious need, the Council on Medical Education of the American Medical Association began about 45 years ago the annual listing of hospitals offering satisfactory internship opportunities.[6] Subsequently, in 1919, the Council took leadership in developing certain basic guides or standards which were presented as the "Essentials" or minimum requirements for internship training in hospitals seeking approval for such programs. These basic standards were developed in consultation with leading clinical teachers. They have been subject to constant review and revision in efforts to align them appropriately with current knowledge and trends of any given period. Since 1928 the American Medical Association has maintained a field staff to assist the Council in the

evaluation of these programs in terms of the "Essentials" and to aid those concerned with this phase of medical education in developing and maintaining adequate programs.

As the trend toward specialization advanced, the American Medical Association, through its Council on Medical Education and Hospitals and in cooperation with representatives of the specialty fields and eventually the specialty boards, undertook the task of developing basic standards or "Essentials" for graduate education and training beyond the internship. These have been prepared as guides to assist those developing such programs as well as to furnish information to persons seeking such opportunities. The Council's field staff visits institutions which have applied for approval of residency training programs and at periodic intervals revisits institutions conducting programs previously approved. Reports of the findings during such visits are submitted by the field staff to the Council and specialty boards and constitute part of the evaluation process currently utilized in the approval and annual listing of programs in the field of graduate medical education.

In order to obviate unnecessary duplication of effort as well as dual concepts and interpretation of standards by the Council, which approves programs, and the specialty boards, which evaluate and certify individual physicians as meeting specialty qualifications, the Residency Review and Conference Committee [7] procedure was developed. These committees, representing both the Council and the specialty boards, have cooperatively reviewed and revised the "Essentials" in keeping with the changing scene. Furthermore, this cooperative function extends to the responsibility for approval of residency education and training programs, subsequently listed by the Council in the annual internship and residency issue of THE JOURNAL. One of the most important objectives of this liaison has been to foster opportunities in residency education and training for total programs in any given institution or through appropriate affiliations so that the resident may be assured of reasonable continuity and upgrading rather than undergo fragmented, isolated, and inadequate segments of experience.

The 1940 Report of the Commission on Graduate Medical Education [8] clearly indicated the objectives and basic principles underlying the internship, residency experience, and postgraduate education. The need for constant study and reappraisal, intelligent experimentation, and flexibility of thought and action is emphasized throughout this report, most of which, with minor modifications, is pertinent to the current setting.

Perspective in Specialization

Graduate medical education has not developed on the basis of careful study or projection of needs in specialty areas. To date, graduate medical education and training has developed in response to the interest of leaders in the various specialty areas. Clinicians as well as hospital administrators recognize the valuable service functions which accompany the educational aspects of intern and resident programs. Through the activities of the Council on Medical Education and Hospitals, the American College of Surgeons, the American College of Physicians, the specialty boards, the Association of American Medical Colleges, and other interested organizations, it has been possible to maintain some semblance of order in graduate medical education out of what might otherwise have resulted in chaos equivalent to or worse than that existing in medical schools at the turn of the century.

Today there are no absolutely clear-cut lines of division between the clinical clerkship of the final year in medical school, the internship, the residency, and even some aspects of postgraduate medical education. In many instances the same facilities and patients are being utilized and the same faculty personnel may be involved in all of these areas of medical education. Advances in knowledge have been of such magnitude that the medical school experience alone no longer qualifies a physician to enter practice but, rather, furnishes the initial plateau on which he erects the additional education and training essential to qualification for general practice or a specialty.

It is natural, in view of this rapidly changing panorama, that there has been aroused interest and concern on all sides regarding the various phases of medical education, particularly with its graduate aspect today. In the 40 years since the establishment of the standards suitable for qualification for the first of the approved American specialty boards, 18 other basic specialty boards have been approved. In addition, there are 6 areas of certification in subspecialties and 28 areas of special certification for a total of 53 different sets of standards and qualifications.[9] These constitute only those specialties, subspecialties, or areas of special certification which have met approval of the American Medical Association through the recommendations of the liaison mechanism established between the Council on Medical Education and Hospitals and the Advisory Board for Medical Specialties.

The rapidly changing advances in therapy since the establishment of the 19 approved boards in the medical specialties have necessitated major alterations of requirements and standards for some of them in order to justify their continuance as identifiable entities. Natural history [10] furnishes many examples of the situation in which, as time goes on, the very qualities which initially insure success and constitute "fitness" may eventually prove a handicap to specialization. Where an area of interest is too narrowly specialized to a given set of conditions, the specialty has the potentiality of succumbing if the conditions justifying its original develop-

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ment disappear or become markedly altered. The warnings of natural history are worthy of serious thought today as the trends for narrow specialization continue, for, in the long run, excessive specialization or overrigidity in the application of standards may become distinctly disadvantageous and result not in survival but in extinction or stagnation.

In the course of this review, I have endeavored to portray first the early background efforts of the medical profession in the United States to develop standards for professional education. This early concern stemmed from the desire of medical leaders to make it necessary for persons entering the field of medicine to do so through having opportunities for education and training in keeping with the knowledge and needs of any given period and in the best interests of their future patients. It was apparent from the beginning of this effort that the development and maintenance of sound standards necessitates cooperative effort and cannot be achieved by a single state or organization. The philosophy underlying these early efforts to develop standards in medical education was based on dissatisfaction with existing situations and a desire to elevate the education of the profession to what it should be.

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WORKSHOP CONFERENCE ON SPECIALISM IN MEDICINE

1. RESIDENCY PROGRAM

Wright Adams, M.D., Chicago
and
George A. Wolf Jr., M.D., Burlington, Vt.

The Workshop Conference group on Specialism in Medicine concerned with the residency program started with a kind of explosive force. The intense interest in the subject stemmed from the fact that the number of residency positions available rose from 7,666 in 1945 to 27,835 in 1956 [1] and that four new American specialty boards were created in the same period of time.

To summarize the "talk" which occurred would consume much space, and to identify the emotions which darted about would require uncommon qualities in a scribe. In the first place, the panel was composed of experts; all members, as in local Parent-Teacher Associations, had been through the mill and knew all about it. The true experts (the young residents) spoke with a voice of good sense but, unfortunately, had not experienced the "good old days" and were thus automatically disqualified. It was agreed, however, that residents are underpaid, and note was made of the fact that some had to work out of hours for pay to support wife and family. Many residents, although presumably being educated, do not have time to read during their course of instruction. Finally, in some instances, the resident seemed to be more of a hospital employee than a true arm of the chief of service.

The ills of the residency program were blamed indiscriminately on the specialty boards, the American Medical Association, the Council on Medical

Professor and Chairman, Department of Medicine, University of Chicago School of Medicine (Dr. Adams), and Dean, University of Vermont College of Medicine (Dr. Wolf).

Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 9, 1959.

Education and Hospitals, the Advisory Board for Medical Specialties, the Joint Accreditation Commission, and the university teachers.

It was illuminating to realize that the American Medical Association, through the Council on Medical Education and Hospitals and the Advisory Board for Medical Specialties, merely determines certain minimum standards for the establishment and recognition of specific specialty boards. The boards determine their own programs of training and give examinations. The Council on Medical Education and Hospitals inspects residencies to see if the rules laid down by the specialty boards are followed. The Joint Accreditation Commission concerns itself with the hospital as a service and not as a training institution. The university hospitals are inspected by both groups and do not set minimum standards, although we hope they might point to maximum ones.

We then pursued the objectives of a residency training program. In brief, everybody was against sin, and for a while it appeared as though research as part of a residency program was a sin. Research was variously defined all the way from that conducted by the bearded savant who frightened patients in his musty basement laboratory to that of the tippling dilettante whose scientific curiosity begins and ends with asking the question, "Where am I?"

Cooler heads prevailed, and it was finally conceded that few of us (residents included) are true academic career investigators but that many of us approach a clinical problem with a base of scientific information, accumulate data by careful observation, synthesize the data into a working diagnosis, and plan and execute controlled therapy.

We neglected to explore the educational process from the standpoint of the truism that teaching and research go hand in hand and that the teacher who is not constantly testing his knowledge, questioning its validity, and adding to his fund of proved information is not a teacher but, as one bright student said, "a person who is transmitting static ignorance from one generation to another."

There was no doubt that we all wanted to train a good physician, but at that point, as usual, we were unable to define a good physician. "Honest" and "qualified practice in the area of his interest and training" were mentioned. This was good until somebody said "private practice," and the fight was on. Almost in tears, one of our members predicted the demise of solo private practice, and the academicians immediately jumped to the conclusion that training for private practice was directed against academic medicine.

Eventually, it became clear that we all should encourage young people to go into academic medicine because of the shortage of teachers. It was agreed that undergraduate medical schools should not be loaded with too much specialty training and that the education during the undergraduate years should be basic. Nobody defined basic, however. Training in university teaching hospitals should provide opportunities for those interested in academic medicine as well as the practice of medicine in whatever form. Nonuniversity teaching hospitals have a job to do in preparing physicians for the practice of medicine but need not discourage interested residents from entering academic medicine.

The quality of the teacher came up for the usual discussion. Here, the all-or-none law prevailed—investigators were poor teachers, practitioners were poor teachers, and so forth. In stereophonic, however, it sounded as though the good teacher was a person with time to teach, with interest in teaching, and with adequate curiosity and energy to educate himself continually. He had the ability of delegating to residents the care of patients under supervision according to the stage of development of the individual resident. It was emphasized that medical student teaching by residents assists in the learning process of the latter. It was abundantly clear that the best residency program, according to the book, and the best teaching hospital are no better than the teacher involved. A good teacher could guide a resident into doing some original investigative work, and this experience in itself was felt to be of some value to the training of the resident as a practitioner.

Residency training programs which are rigid and prevent the development of originality in a resident were scored. Rigidity and narrow experience might lead to the training of supertechnicians in certain fields, but general training as a physician was felt to be necessary. The point was made that a specialist in a restricted field must either have some general training enabling him to give full care to patients or else limit himself to consulting practice. Here it was not clear whether the basic training needed prior to the residency program was to improve the understanding of people and human pathophysiology or to prepare the specialist to take care of most of the diseases he would find in certain specific practice circumstances.

The spirited discussion raised several questions which need answers: What is basic to the education of all physicians prior to entering upon specialty training? Should this vary in the case of certain limited specialties? Can specialty boards establish minimum standards without imposing rigidity of program and preventing development of originality in the resident? Are there too many specialty and subspecialty boards? Can university medical education and hospital training for general or specialty practice be defined more clearly?

Miss Theresa E. Falaguerra, assistant project director, Bureau of Applied Research, Columbia University, assisted in preparation of this report.

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WORKSHOP CONFERENCE ON SPECIALISM IN MEDICINE

2. THE SPECIALTY BOARD

John M. Mitchell, M.D., Philadelphia
and
Sam W. Banks, M.D., Chicago

The Workshop Conference on Specialism in Medicine from the standpoint of the specialty board was opened at 2:15 p. m. with a large attendance. The nature of the facilities precluded a satisfactory round-robin talk by the members of the workshop panel, and the chairman invited all guests to participate. There was a lively discussion from the floor throughout the proceedings.

As an introduction, the purposes and functions of a specialty board as described in the "Essentials" were elaborated on as follows: (1) to assist in improving the quality of graduate education in that field; (2) to establish minimum educational and training standards in the specialty in conformity with the general provisions of these "Essentials"; (3) to determine whether candidates have received adequate preparation as defined by the board; (4) to provide comprehensive examinations to determine the ability and fitness of such candidates; and (5) to certify the competence of those physicians who have satisfied the requirements of the board as a protection to the public and the profession.

After this, the history of the development of specialty boards was outlined. It was brought out that, in the early days of specialization in the United States, there was no mechanism by which a person might be identified as a specialist. Many men entered the field of specialization from general practice after having gradually developed their work in a single area. Other physicians entered specialty practice through residency training, but the residency training programs in those days were determined entirely by the chief of service and the facilities at his disposal. The duration of training was, in its turn, determined by the chief or by the whims of physicians undertaking training. Other physicians entered specialty practice through preceptorships, while still others, after a vacation period of indefinite length abroad in which they might or might not have really participated in training programs in one or another of the European capitals, returned and declared themselves as specialists. It was to meet this highly unsatisfactory situation that the first specialty boards came into being.

Dean, University of Pennsylvania School of Medicine (Dr. Mitchell), and Secretary-Treasurer, American Board of Orthopaedic Surgery (Dr. Banks).

Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 9, 1959.

The belief was expressed that medical schools at this time were in no position in terms either of personnel or of finances to undertake the regulation of specialty training and the boards filled this gap. The belief that medical schools were not in a position to do this was not held by everyone, the opposing opinion essentially being that there was a lack of appreciation on the part of schools of what was happening.

The Training Program

The rapid growth of specialization and of residency training programs was indicated by the fact that at their inception in the first decade of the present century 2,000 residency appointments were in existence throughout the United States while today there are 25,000 physicians in residency training.

Some expressed the view that the boards should not enter in any way into the conduct of residency training programs and that they should not have requirements for a specified period of training prior to certification. It was postulated that the board's only function was to certify to the competence of the person to practice the specialty. The mechanism by which this competence was attained should not essentially be the concern of the board; it should depend entirely on an evaluation process to determine who should receive its certificate.

It was brought out, however, that no one could say with authority that any particular plan of training was necessarily the best or only acceptable plan and that every person required the same sort of training. The procedure thus outlined follows fairly closely the English system, in which full dependence is placed on the examination.

In rebuttal, it was noted that some 75% of candidates in Great Britain flunked the first examination because their training had been unsuitable, whereas in the United Sates, where training programs are prescribed, the failure rate is not nearly so great. Further, it was noted that although specialty boards set minimum standards many allow for flexibility within the stated program through one or another device. Further, in support of the system in the United States, it was brought out that many hospitals with relatively weak training programs had sought assistance of the boards and, with this aid,

had been able to improve their training, resulting in raising the level of residency training and of specialty practice.

The Examination to Determine Competence

The question was raised as to whether we can depend on an examination as the sole means of determining the competence for specialty practice. It was the general consensus that this could not be depended on and that consideration must be given to other factors, namely, the site of training, the duration of training, and the evaluation of the trainee by chief of service.

It was emphatically brought out that the board can only certify that the candidate has fulfilled the training requirements, that he has been recommended by his peers, and that he has passed the examination of the board. There seemed to be general agreement that this was as far as the board could go, and it was reiterated emphatically that the boards did not consider themselves to be licensing bodies but that the certificate was more in the nature of a degree—that is, it indicated a certain background of experience and the ability of the person to pass the examination at a given time.

Uses of the Certificate

It has not been the intent of the boards that the certificate be used to limit staff appointments to those who hold certificates, to give grounds for preferential treatment in terms of compensation for diplomates of boards on certain government services and hospitals, or to indicate that those who do not hold certificates are not competent and that they should be necessarily limited in their freedom to practice a specialty. However, it was brought out that other agencies than the boards themselves did use the certificate as a criterion for their own purposes and that this should be admitted. Several persons saw no objection to this. In any event, all agreed that there was nothing the boards could do about it.

What does specialty board certification mean to the profession and the public? This question was raised, but no one seemed to feel qualified to speak for the meaning of certification to the public. It was felt that its meaning to the profession had been covered in other discussions and needed no further clarification.

Residency Training in Approved Centers

No clear-cut statement with regard to a satisfactory substitute for board regulation of residency training programs was brought forward. It was suggested that a searching examination might be used for this purpose. The belief was stated by one member that this was possible in certain specialties, such as pathology. Nobody, however, was able to bring forth a satisfactory alternative plan, and, while the desirability of flexibility was expressed by many, in practical application it was felt that some evaluation and regulation of training programs was necessary, at this stage in our development, with many hospitals lying entirely outside regularly constituted teaching centers. Many of these hospitals conduct highly satisfactory training programs, but a high percentage need guidance and assistance and many turn to the boards for this help.

Questions were asked on the number of specialists to be trained and the anticipated needs for the future. No answer was forthcoming, but it was indicated that a balance between supply and demand was maintained by the mechanism whereby unoccupied residencies were dropped and, when new programs were created and not occupied, that they also were inactivated.

NEW OCCUPATIONAL DISEASES.—Every year some 200 disease entities are added to the total number of approximately 3,000 occupational diseases. This increment is more than the aggregate for all other medical specialties combined. It may be doubted that any professional distinction resides in this continually mounting lot of added affections, but the fact reveals the tempo of industrial medicine and the requirement for swift adjustment in meeting increased professional burdens. The majority of the additions represents precisely new entities springing from the appearance of a new chemical compound every 24 minutes throughout the year. Many of these chemicals never become important to production. Of those that do, the majority prove innocuous as to toxic properties. There remain those highly significant ones that possess harmful properties for sufficiently exposed workmen.

A second source of the yearly increase in occupational diseases is the fact that many pathological states, long regarded only as diseases common to ordinary life, under special circumstances become true occupational diseases. . . . An example is psittacosis. In the early days this disease was regarded foremost as a threat to the owners of pet psittacine birds. Soon it became apparent that dealers readily might be involved. Still no label of occupational disease was applied. Only in recent years has the proper category appeared after the high incidence of psittacosis in the fowl packing industry brought about the full acceptance of this disease as inescapably occupational under some circumstances.—Carey P. McCord, M.D., The Zooanthroponoses, *Industrial Medicine & Surgery*, April, 1959.

WORKSHOP CONFERENCE ON SPECIALISM IN MEDICINE

3. THE RESIDENT AND FELLOW

A. McGehee Harvey, M.D., Baltimore
and
George G. Reader, M.D., New York

The workshop was opened with an outline of the magnitude of the problem posed by the training of residents and fellows. The figures given by Dr. Ernest L. Stebbins were cited: 31,000 physicians studying in 5,000 programs in 1,200 different institutions. This is a far larger area of educational endeavor in medicine than the medical schools themselves provide. With the growth in population and research training predicted by the Bayne-Jones report, it may be expected that by 1970 a billion dollars a year will go into medical education and research. Since less than a third of that amount is now being spent, the rate of growth in the next decade will be logarithmic. It is going to take a great deal of intelligent thought to plan the new training programs and to deal with the competition that will inevitably occur among them.

Various members of the panel were then called on to discuss the problem from their respective points of view. Dr. Robert Glaser spoke as a medical school dean, drawing attention to the dilemma posed by the educational needs and service responsibilities of residents. He emphasized the need to keep residency and fellowship programs education-centered and pointed out that it is far too easy in residency programs for the house officer to become involved in service. If he does, he may develop his technical skills but there is the danger that he will not learn to continue his education in the broadest sense. All of us in medical education are concerned with three functions: education, research, and service. It takes an active effort to see that an appropriate balance between these is maintained for the resident or fellow. In this important phase of his education, service and even research activities must be controlled.

Hospital Problems

Dr. Russell Nelson, a university hospital administrator, referred to Dr. Herman E. Pearse's report on surgical training at Strong Memorial Hospital, Rochester, N. Y., for evidence that the service component of residency training is diminishing in university hospitals. He voiced some concern that the service load continues to be a serious problem in nonuniversity hospitals which have the majority of residency programs. In some of the smaller hospitals, it may actually be easier to build up residency programs to meet service needs than it is to attract interns.

Professor of Medicine and Director of the Department of Medicine, Johns Hopkins University School of Medicine (Dr. Harvey), and Professor of Medicine, Cornell University Medical College (Dr. Reader).

Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 9, 1959.

Another problem for the hospital is meeting the resident's economic needs. In most instances his stipend comes out of the hospital's operating income and his economic requirements, therefore, compete with other powerful factors—inflation generally and the increasing complexity of the modern hospital—which are steadily forcing hospital costs upward. But young men and women in residencies should be looked on as graduate students, and their economic needs should be met from that point of view rather than from the point of view of their contributions to hospital service.

Dr. Henry Uhl spoke as director of medical education in a hospital not affiliated with a university. He raised a number of questions germane to this situation. One is the problem of organizing a group of practicing physicians into an effective teaching faculty. He pointed to the long-standing precedent of the full-time pathologist in the hospital serving as the mainstay of any teaching program. Full-time radiologists, anesthesiologists, and clinical department heads may be expected in the future also to form a nucleus for the teaching faculty required in a residency program.

Another problem in the nonuniversity hospital may be the characteristics of the residents themselves. Often these men have less academic ability than their classmates who have obtained appointments in university hospitals. They may therefore require greater efforts to motivate them to learn because their inclination is to occupy themselves merely with technical busy-work. Foreign graduates, too, are absorbed mainly by the nonuniversity hospitals. Their academic preparation in medicine is often less good than that of American graduates, and they may be oriented more to vocational than to educational goals.

The number of candidates who desire residencies may always be expected to exceed greatly the capacity of university hospitals to accommodate them. It is important, therefore, that nonuniversity hospitals achieve an educational atmosphere and continue to raise their standards.

Needs of Medical Trainees

Dr. John S. DeTar, of the American Academy of General Practice, then raised a question regarding the needs of medical trainees in the light of their ultimate role as practitioners. He pointed out that between 40 and 50% of the men graduating from American medical schools between 1940 and 1954 are now in general practice and that this percentage is rising rather than declining. Of those entering general practice since 1940, only 62%

have had any residency training at all.[1] Most medical educators agree that a one-year rotating internship is inadequate preparation for practice. Two years is a minimum, and this experience should be especially designed for the man who will be a family practitioner. But, of the 25,000 filled residencies in the United States today, only 468 are in general practice and most of these are inadequate.

The American Medical Association's Committee on General Practice has been working on this problem for the past two years. This committee includes representatives from the Association of American Medical Colleges, the specialty boards, the A. M. A. Council on Medical Education and Hospitals, and the American Academy of General Practice.

Dr. DeTar stated that their present plan is to recommend a two-year program that would replace the internship and one year of residency training. It would consist of 18 months of adult and pediatric medicine and would include dermatology, office otolaryngology, and traumatic and minor surgery. The final six months would be spent in surgery, obstetrics, or a subspecialty of medicine, depending on the type of practice the physician anticipates. The Committee has defined a general practitioner as a doctor of medicine who assumes total continuing responsibility for the health of the individual and his family, and it is believed that the program outlined will serve as a proper basis of preparation for this role. It is expected that further training would be obtained, possibly with specialist preceptors on the hospital staff in the community where the young physician enters practice. Dr. DeTar commented that the Committee hoped the state boards of licensure would acknowledge the value of the program outlined by requiring it in place of the present one-year rotating internship.

Dr. Patricia Kendall, a sociologist on the staff of Columbia University's Bureau of Applied Social Research, then reported some findings from ongoing studies of the attitudes that medical students have toward their professional role.[2] Data are available from students of three schools over a number of years. These students are now being followed through internship and residency training.

The quality of teaching was by far the most important consideration that led them to choose a particular hospital for their internship. Salary ranked very low in their stated considerations, and it seems to be a factor only for persons who, because of family obligations, are under great financial pressure.

The degree of responsibility they expect to have is highly important to them, as are the medical reputation of the hospital and adequacy of patient material. They are wary of being exploited and of being required to do any considerable amount of scut work.

It is becoming evident from their responses that they look on their internships and residencies as progressive educational experiences. What may contribute to learning at one stage, therefore, may later be considered repetitious and trivial. In view of this, it may not be realistic to speak of service and education as a dichotomous dilemma. It may be more appropriate to determine the cut-off point at which certain activities cease to be educational for the resident.

Other Problems

After this, discussion among members of the panel became general. In this discussion and in questions raised from the floor, a number of topics were reviewed. Both residents on the panel, Dr. Albert Fish and Dr. Nahman Greenberg, emphasized the importance of the economic situation of the resident. They pointed out that, although salary was not usually the major inducement for choosing a particular residency, lack of adequate funds often requires the resident to make compromises in his career plans. These compromises frequently limit his potential development.

Others suggested the possibility that the financial advantages of fellowship stipends sometimes caused young physicians to accept fellowships for research training prematurely. By interruption of their residency training, their proper clinical development as physicians may have been handicapped or retarded.

The question of how to compensate for the decline in ward patients was also considered. Whether private patients can be used in residency training is a moot problem. Many felt that the difficulties are more likely to arise with the patient's physician than with the patient himself. If the private physician is sympathetic to the resident's needs, his patient is usually agreeable to being transferred temporarily to the care of the resident. The private physician then acts as preceptor and consultant. This, of course, is more difficult in surgery than elsewhere.

Finally, it was felt that the training of practicing physicians as teachers merits special attention. Hospitals must be so organized as to provide a framework within which the practicing physician can function as a teacher. For these purposes, it is essential to have supervisory relationships, such as those offered by a full-time chief, that serve to instruct the practitioner in his educational role.

525 E. 68th St. (21) (Dr. Reader).

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WORKSHOP CONFERENCE ON SPECIALISM IN MEDICINE

4. THE HOSPITAL

Joseph C. Hinsey, Ph.D., New York
and
John F. Conlin, M.D., Boston

"What are the objectives of the hospital administration and the medical staff in establishing or maintaining graduate clinical training programs?"

It was felt that, in essence, graduate clinical training programs were an upward extension of medical education from the medical schools into the hospitals. About one-third of all internships and less than half the total number of residencies offered are located in hospitals making available outstanding educational experiences. Despite continued and concentrated effort, many hospital administrators, trustees, and hospital staff members have continued to place emphasis on the "service" aspects of house staff training.

It is admittedly difficult to render a precise definition of service. However, it was strongly felt that overemphasis of "service to institutions" or "service to staff" with considerably less emphasis on the basic requirement of furnishing an educational experience to the house staff members is undesirable. It was brought out that in many instances a busy service experience can be accompanied by a drive to read and to study and benefit by teaching and consultation opportunities, thus keeping abreast of the rapidly paced service march. Hospital administrators and hospital staffs usually aim at common ends but differ occasionally concerning the methods of obtaining them.

There was considerable discussion of unsatisfactory situations arising from overlapping areas of specialty jurisdictions. It is impossible, administratively, to follow rigid policies of area segregation of various subspecialty patients in general hospitals. There was strong support for administrative grouping of the surgical specialties, including obstetrics and gynecology, and of the medical specialties, including pediatrics.

There was, likewise, strong feeling that many present administrative problems of the hospitals arise from the rather haphazard growth and development of the many specialty and subspecialty boards. A parallel was drawn between widespread efforts to integrate undergraduate medical curriculums and the need to reevaluate and regroup supervision of services and training in the various specialties. The evils of overdepartmentalization, splintering, and fragmentation were repeatedly stressed. The chairman pointed out that two aspects of immortality were represented by the "bureau" in Washington and the "department" in a medical school or hospital.

There was complete agreement that the primary objective in establishing and maintaining graduate clinical training programs is the best service to the public and the best possible care of the patient. Size of the hospital and extent of its teaching program should result in no departure from this basic statement of objective. It was also pointed out that the different problems of teaching hospitals regarding the teaching of undergraduate medical students, interns, and residents, in any combination of these, will have an effect on graduate clinical training programs.

The objectives of graduate clinical training programs will be affected in varying degree by trends in medical care programs, various types of insurance programs, availability of private patients for teaching, and other factors. It was agreed that good teaching programs should not depend entirely on the availability of ward or service patients.

The hospital administration and the medical staff have a major objective in setting the highest possible level of performance of their teaching function, and from this should follow high-level patient care. There was general agreement that research and teaching are inseparable and that it almost invariably follows that where these are of a high level patient care of good quality should result.

One of the hospital's primary purposes is the attracting and holding of an able staff. There seems little question that the establishment and maintenance of a high type of graduate clinical training program is a means of attaining this end.

Compatibility of Objectives and Responsibilities

Question two was as follows: "Are these objectives always compatible with the medical service responsibilities of the hospital and the educational goals of the residents? If there are conflicts, what are their sources?"

This problem was posed in general terms as one of the areas of conflict between service responsibilities of hospitals and the responsibilities for furnishing proper training programs. Considerable discussion hinged around outpatient department services. It was admitted that these services could

Director, New York Hospital–Cornell Medical Center (Dr. Hinsey), and Medical Director, Boston City Hospital (Dr. Conlin).

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constitute a substantial drain on the time of house staffs. It was further admitted that an outpatient department, doing a proper service job, undoubtedly lessened admissions to the hospital by stepping up diagnostic, treatment, and rehabilitational procedures at the outpatient level. A corollary to this, however, was the increase in hospital admissions due to faster case finding at diagnostic clinic levels.

Attention was given to the aspect of increased reliance on house staff members by the visiting staff in the care of private patients. This function has, of course, elements of both service and education.

After considerable discussion there appeared to be agreement that, despite the advantages of performing and even repeating many low-level technical procedures as part of the learning process, caution must be exercised to avoid wasting of valuable time through undue prolongation of the apprentice period in senseless repetition of unnecessary tasks. The experience of the military forces in the increased use of technical assistants, as for operating room technicians, was cited as an example of a trend leading toward more efficient utilization of professional personnel services.

Where unmet service needs exist, there is a tendency to seek out and use any services available. Many institutions, in the absence of high-quality graduates, have had recourse to the services of low-qualifying foreign graduates, resulting in a lowering of the level of available patient care.

With the increasing complexity of hospital services there have been increasing demands on the services of radiologists and pathologists. This has frequently been interpreted as a local need for increasing the number of residents in these fields, but, in many instances, the local need was for another pathologist or another radiologist rather than for another specialty resident. Areas of conflict have arisen from the tendency to build empires within specialties. There has been a marked increase in the tendency to develop highly specialized services within broad specialty areas.

Residents trained in many highly specialized fields have difficulty meeting the requirements of the broader general specialty needs in the communities to which they go. Various hospital departments, including a wide diversity of highly specialized services, present problems of duplication, overlapping, and costly budgeting.

It was generally felt that it was not necessary to good teaching in good graduate clinical training programs that a department should be completely self-contained with its own radiology, biochemistry, and other specialty groups.

Discussion included the variation in the needs of community hospitals and large teaching hospitals. It was agreed that what happens in the teaching hospitals definitely has an impact on the community hospital, since the latter is a consumer of the professional practitioner services produced by the former. It was strongly stressed that the overspecialized worker, such as a radiologist whose major field of interest is in radioisotopes, may not meet the requirements of a community in urgent need of a well and broadly trained radiologist.

In general, there was agreement that the service responsibility of a hospital can be satisfactorily met outside the training program and without undue interference with the training program.

Provision for Needs of the Residency Program

Question three was "What are the responsibilities of the hospital administration, the medical staff, and the patient population in providing for the needs of residency programs, in terms of (1) teaching personnel and program, (2) research space and equipment, (3) library, and (4) clinical material?" In regard to the first portion of the question, it appears that, in many instances, approving authorities for residency programs are guided by the attitudes of persons in charge of specific programs. These persons are frequently of excellent ability and may be inspired and devoted teachers. It is possible for a teaching program to succeed because of the inspiration and leadership of one person, but it should be pointed out that more than a one-man preceptorship type of training is required; for a program to succeed, interest should extend considerably beyond a single teacher. Satisfactory individual departments and individual performance levels do not necessarily combine to an effective program. There must be a coordinating factor at work.

There was general agreement that teaching programs needed planning and continuing, preferably full-time, supervision. There is a dual responsibility of the hospital administration and of the medical staff to see that standards are set and maintained.

Comments on the second portion of the question, namely, research space and equipment, pointed out that area, cost, and amount of equipment would depend, to a great extent, on the size of the institution and the size of the program conducted. It was stressed that the spirit of research can be had wherever teaching is carried on and that this spirit can grow and develop within the means available to the hospital. It was noted that many institutions are being led into expenditures for research programs where competent persons to conduct the program are not available. There is danger in the concept of "research for the sake of research." There must be available sound planning, the exercise of sound discipline, and the specialized equipment to meet the needs of an available staff and its interests within the limits of the ability of a hospital to supply it.

There was agreement that it is valuable for a resident to be exposed to a research program. He should be encouraged to conduct a modest program

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of his own, under proper direction. Without this experience, he will lack a proper appreciation in evaluating the results and the reports of others. There is not always time for an extensive research program for residents. It was pointed out that undergraduate medical students, through various fellowships, summertime work, and similar programs, have markedly increased opportunities in recent years for exposure to research programs. It was felt that it was certainly not necessary for all hospitals to offer extensive research opportunities.

In regard to portion three, the library, it was agreed that research begins in the library and that adequate library services should be furnished by the hospital administration for at least the routine needs of residents in training.

Relative to portion four, provision of clinical material adequate in numbers and kind, available statistics show a trend on the part of candidates for graduate training of migration toward larger hospitals and away from smaller hospitals. It was felt that, as the number of graduates increases, some existing vacancies will be filled in order to meet their needs. Progress is being made toward the objective of making available for residency training all patients—private, semiprivate, and public. There are continuing difficulties in various places in making private patients available for teaching. It is felt that the greatest progress has been made in the use of private patients for teaching by groups. There is danger in the selection of the term "use" of the private patient. Actually, the private patient benefits by participation in a teaching program.

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Compatibility of Service Demands and Educational Opportunities

The discussion then moved to question number four: "Are service demands and educational opportunities for the resident staff generally compatible?" It was generally agreed that these demands and opportunities are compatible. There are, however, notable exceptions and wide variations in various parts of the United States. The tendency to lengthen periods of residency training was deplored. The remarks made previously (concerning prolonged and senseless repetition of apprentice-type tasks) were felt to have pertinence in the discussion of this topic.

Remuneration for Residents

Question five asked, "What is an equitable financial remuneration for residents? How can it be determined, and what should be its source?"

It was felt by some that pay should be made for services rendered. It was pointed out that in the past decade more residents have married and that the presence of two and three children in their households is not unusual. Lengthy training periods present serious economic problems. It was felt that responsibility for payment for residents' services could be assigned (1) to the hospital, since residents care for patients; (2) to the university, since in teaching centers residents engage in teaching students; and (3) to the patient and especially to third-party sources of payment. It is perhaps forgotten that in one way or another the cost is ultimately passed on to the patient.

The perennial problem of whether members of the healthy community or those of the sick community should underwrite the cost of residency training was discussed, but time did not permit adequate consideration. It is regrettable that prolonged borrowing to finance a lengthy educational experience in some instances leads to concentrated effort to obtain a high level of earning as rapidly as possible in order to "get it back fast."

There is no doubt that many who wish to continue residency training are unable to do so because of financial handicaps and are unable to borrow. This has always been true to some extent. In balance, it must be remembered when considering resident stipends that much is received in return for the opportunity for the resident's educational experience and that this is not immediately measurable in dollar value.

The question was raised whether compensation of residents at a high level would help or hurt. There seems to be little experience to justify opinion in this area. There was some feeling that too-high levels of payment might lead to undue prolongation of periods of resident training.

The Hospital Director of Medical Education

The discussion then moved to question six: "What is the proper role of a hospital director of medical education? What should be his relationship to the hospital administration, medical staff, house staff, and patient population?"

The position of hospital director of medical education has evolved rapidly in the past few years. This responsibile position has been of great advantage in instances in which there has not been a continuing responsibility for a resident training program. In many hospitals service chiefs rotate at frequent intervals—in some instances more than once within the same year. Such lack of continuous direction and control obviously works against satisfactory educational programs. Many of these situations have been satisfactorily resolved by obtaining services of competent, well-trained young men with special interests and abilities.

Special problems concerning this relatively new area of responsibility have been discussed at various times and, as recently as within the past month, at a meeting of hospital directors of medical education

conducted under the sponsorship of the American Hospital Association. Unfortunately, lack of time prohibited additional discussion of this topic at this workshop.

Related Comments

Lest the monotone of this report imply that the discussion was gentle and even desultory, your reporter begs leave to toss in these few random direct quotes:

"The house staff renders professional services. Why shouldn't the visiting staff contribute toward payment of their salaries?"

"Certainly we residents cannot ask for all we would be worth in practice."

"Many hospitals feel that the better the residency the lower should be the pay. Many prospective residents simply cannot afford to go on with this view."

"Much that is now regarded as education adds only to the length and not the quality of educational programs."

"Groups are fine but it will not be a good thing if we close-group all of our teaching centers."

"In my day, as resident, we felt we were lucky to get what we got. Our babies were our own responsibility and not that of the community. Residents should have enough to live but demands need not be met in toto."

525 E. 68th St. (21) (Dr. Hinsey).

THE ROLE OF MEDICAL EDUCATION IN CIVIL AND DEFENSE MOBILIZATION

John S. Patterson, B.S., Washington, D. C.

I am grateful for the opportunity to address this group, but let me assure you at the outset of these remarks that I do not speak as an expert on medical subjects. So, for the sake of the medical profession and my responsibility to the federal government, I should like very simply to express to you something of the urgent problem which each of us faces as we live in this age of continuing and accelerating changes.

Although I am not a medical man, I feel curiously at home in this gathering. Your concern with medical education and specialism parallels my concern over some of the major national security problems which we face today. That sounds like an enigma. Let me explain. The crux of your problem is the acceleration and proliferation of scientific knowledge and technological development. In the few years since 1940 we have made more scientific progress than in all man's history up to that time. When you write out a prescription today, the chances are 7 out of 10 that the medicine you call for did not exist 15 years ago.

Science is continuing to accelerate its onrush. If you are five years behind in your thinking now, you are more out of date than your fathers would have been if they had been 25 to 50 years behind in theirs. As you plan ahead to make medical education keep up with progress and to make physicians keep up with medical education, your problems multiply at a discouraging rate. You have to run faster and faster to stand still.

Consider, then, the broader problems of national security which we in the United States face and must learn to solve. Consider the significance of the growth in the power and range of missiles and in the number being produced. Consider the costs of providing adequate protection against fall-out throughout the United States. Consider our international problems: foreign aid and foreign bases, how to handle the Russians, and how to deal with the triple revolution in the underdeveloped areas—the revolution of rising economic expectations, of rising resentment at inequality, and of rising determination to be free and independent.

Our national security problems are formidable indeed. From the vantage point of my office the problem is one of learning to live in a new age—an age when we are under the constant threat of massive attack. And I say this irrespective of the current state of our relations with the Russians or of what their motivations may or may not be. As long as the arsenals of annihilation exist, so too does the threat exist.

We are living in the most perilous and dangerous period of man's history. We have learned how we can all die together, but we have not yet learned how we can all live together.

When you hear people criticize the inadequacy of civil defense preparedness, I hope you will draw the analogy with the problem of medical education. I hope you will remember that we, as a nation, have not really been able to keep up with the increases in the power of destruction during the last decade but we have come a long way from a standing start.

Deputy Director, Office of Civil and Defense Mobilization.

Read before the 55th Annual Congress on Medical Education and Licensure, Chicago, Feb. 9, 1959.

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Advances in Defense Preparedness

To illustrate some of the real progress we have made, let me summarize a few of the major developments in civil and defense mobilization readiness during the past year. I will tell you briefly about the creation of my new agency, about the National Plan for Civil and Defense Mobilization, the National Shelter Policy, and our radiologic defense program, and then I will comment on some of the recent developments of medical interest.

The most important action at the federal level was President Eisenhower's Reorganization Plan no. 1 of 1958. This merged the Federal Civil Defense Administration and the Office of Defense Mobilization and created the Office of Civil and Defense Mobilization in the Executive Office of the President.

It gave to the President directly the responsibility for all of the nation's nonmilitary defense. As commander-in-chief, he already had full military responsibility, and he now directs the total defense of the nation.

The President has delegated to the Office of Civil and Defense Mobilization those responsibilities that lie outside the military area. It eliminates duplication of effort and overlapping and conflict of interest and programs. It establishes unified federal guidance and direction. It has given new strength and stature, a proper standing in the federal government, to the critical mission assigned to us.

The most significant action which this new agency has taken to date was the issuance last October of the National Plan for Civil Defense and Defense Mobilization. This is the first time that an over-all plan for nonmilitary defense has ever been developed and circulated. Many months of effort and negotiation went into this plan, which will serve as a guide to the development of civil defense and defense mobilization programs at every level of government and in private organizations as well.

The plan, as issued, is only a beginning. It is just the skeleton and the central nervous system. The flesh and the organs are being developed now in the form of 40 annexes. Each will deal with a particular subject in more detail, describing goals, responsibilities, and jobs to be done. Several of these annexes will be of great interest to you, but particularly the National Medical and Health Plan.

Along with the work on these annexes, we are also readying new executive orders which will delegate specific planning and emergency responsibilities to other federal agencies. The Department of Health, Education, and Welfare, for example, will have the primary responsibility in the medical field.

Another great step forward last year was the adoption by the administration of a National Shelter Policy. This was based on a recognition that shelter from radioactive fall-out offers the greatest potential for saving lives in nuclear attack. The policy calls on citizens and directors of institutions of every sort to create shelter against the hazards of radioactive fall-out.

Each person is obligated to protect himself and his family from fall-out, just as he protects them from severe weather and from hunger. It lays upon federal, state, and local governments the requirement that they provide attack protection for their employees, and the same injunction extends to all institutions, schools, colleges, and hospitals.

The policy also contains the following provisions: (1) intensive education of every American on the possible effects of nuclear attack and the steps that he and his government can take to minimize them; (2) sampling surveys of existing structures to determine their shelter capabilities and what must be done to bring them to standard; (3) accelerated research to show how shelter may best be incorporated in both existing and new structures, to improve shelter design, and to reduce costs; (4) construction by the federal government of a limited number of prototype shelters for various geographical and climatic areas and for various types of construction, including schools and hospitals, insuring that they have practical peacetime uses as well; and (5) setting federal example by incorporating fall-out shelters in federal buildings hereafter designed, as an indispensable stimulation for state and local governments and private investment.

We have issued a general order to all federal departments and agencies to make the last provision effective. The other four require specific appropriations. Our request for funds to activate this policy last summer was caught in the merger of ODM and FCDA, and a tight congressional legislative program schedule. We are renewing our request to the new Congress because it is a sensible approach to a knotty problem and requires federal action.

The corollary of this policy is our program for building radiologic defense everywhere. In any attack, the immediate plotting of the wind and the location of nuclear bursts will give a general indication as to where to look for dangerous fall-out. Four times daily the weather bureau now provides OCDM and the state and local governments with observations of current wind directions and velocities.

Action to be taken by those under cover will be determined by the civil defense authorities in any locality after monitoring or measuring teams, using special radiologic instruments, locate the fall-out where it actually comes down and measure its radiation. A federal network of fixed monitor stations will use the facilities of all federal agencies. In 1959, the federal network will have available 900 fixed monitoring points over the nation, operating around the clock, and, in 1961, 3,000.

To provide for state and local monitoring, OCDM has bought 800,000 radiologic instruments, which are being distributed to state and local govern-

ments. Beginning in September, 1958, radiologic kits have been delivered to 6,000 high schools and colleges, with an additional 9,000 schools to receive them by June, 1959. Through the cooperation of the Department of Health, Education, and Welfare and the state education departments, science teachers in these schools are conducting instruction in the effects of radioactive fall-out, measurement, and monitoring. More than 1 million students will receive such instruction by June, 1959. Cities and states, within their police, fire, and health departments, are already conducting radiologic defense schools. More than 100,000 city and state employees will be instructed by June, 1959. I know that you will agree that these developments, present and projected, will enhance greatly our readiness as a nation to survive attack.

Program for the Medical Profession

Now let me turn to the specifically medical part of this job. I mentioned that we are preparing a delegation to the Department of Health, Education, and Welfare to take the leadership in this field. The proposal to make this comprehensive delegation was discussed fully by Governor Hoegh with the American Medical Association's Council on National Defense, and the A. M. A. heartily endorsed our action. The department will be responsible, through the Public Health Service, for planning and guiding emergency health and medical services, developing national medical casualty and preventive health services, developing a national emergency water supply plan, training emergency health and medical personnel, conducting research in medical and public health emergency measures, and continuously evaluating civilian health and medical resources and requirements.

The magnitude of the job for which the Public Health Service must plan is staggering. In the event of an attack, casualties in need of medical care could be measured in the tens of millions. Great numbers of people would be displaced with resultant increases in daily morbidity. Every able-bodied person would be working to the point of exhaustion. Those with chronic disease would be deprived of their usual attention in homes and clinics.

Premature births, miscarriages, and complications of delivery would increase. Accidental injuries would increase. With the disruption of utilities and the destruction of housing, extensive public health problems may be anticipated. Exposure to the elements and overcrowding in homes and mass-care shelters would intensify the threats of major epidemics of a wide variety of communicable diseases.

Chaos would be further increased by a lack of communications, transportation, and supplies. Finally, the widespread contamination by radioactive fall-out with effects lasting for days or weeks (combined with the delayed radioactive effects) completes a picture of great peril. In the face of this massive and terrifying problem, the health forces of the nation which must form the nucleus of the survivor care job are not now in a state of readiness from a civil defense standpoint for an emergency of these dimensions.

Under our delegation, the Public Health Service, working with the medical and nursing profession, medical educators, hospitals, and public health authorities, will give real impetus to our drive toward overcoming this lack of national health preparedness. The program will be based on the civil defense organization now in being. It will bring to bear the full resources of the Public Health Service in support of the medical profession and the health authorities. At the local level, the Public Health Service will utilize reserve corps to recruit and train physicians and other members of the health team in civil defense as it relates to medical care, preventive medicine, and special measures required in the defense against chemical warfare, biological warfare, and the problems of radioactive fall-out. Each trained person will provide the community with the competence to organize, plan, train, and rehearse its civil defense health personnel. These officers will work closely with state and local organizations already engaged in civil defense work. Thus, there will be a network of trained personnel to provide leadership, to give competent support to state and local organizations, and to coordinate community civil defense efforts.

Let me emphasize one point. Our ultimate limiting resource will be trained personnel. We can stockpile medical supplies and equipment, and we plan to. We cannot stockpile physicians. That is why strong programs of medical education are so vitally necessary.

OCDM, in the amount of $135,000, is backing the program of Medical Education for National Defense—the MEND program—on an equal basis with the Army, Navy, and Air Force, to acquaint instructors with medical problems anticipated in any national disaster so that graduates will be better prepared to assume the responsibilities of military or civil emergency medicine.

With the A. M. A., we have a $150,000 contract that is somewhat related to the MEND program and of great importance to the nation. The A. M. A. will study, develop, and recommend the planning, training, and operational organization needed for a national emergency care plan. We expect recommendations to cover (1) the use of professional and nonprofessional personnel of the medical and related professions before and immediately after attack; (2) the functions and responsibilities of the medical profession that may be delegated and performed by other health personnel; and (3) the training and education needed by health personnel, professional and nonprofessional, for wartime operational capability and the sorting of casualties.

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Finally, we have given the National League for Nursing an $80,000 contract to develop a civil defense content for nursing education, both undergraduate and advanced. Massachusetts General Hospital, Skidmore College, Columbia University, and the University of Minnesota all are working on various phases of this 18-month undertaking.

I think the Association of American Medical Colleges is to be warmly commended because its members themselves recognize the need for developing simpler, faster ways of doing things. We stress the need for priorities of medical service and conservation of scarce skills in postattack planning, and the same principles must be applied in medical education as well as in other walks of life.

I also compliment the A. M. A. and the Association of American Medical Colleges for establishing the Liaison Committee on Medical Education for National Defense as a joint standing group for dealing with the medical education problems in a mobilization or a disaster situation. This should be of great service to us, as will your current joint program to send a questionnaire to all medical schools, to assist and encourage the schools to develop the information and do the planning necessary to preserve the faculty structure and function in a national emergency. The information this questionnaire will produce also will be most useful to OCDM in health manpower planning.

A very encouraging and constructive action to assure continuity of medical education has been put forward by the chief medical director of the Veterans Administration, Dr. William S. Middleton. He has stated that VA hospitals, particularly in nontarget areas, would be willing to plan with medical schools for the relocation of schools whose facilities are destroyed. A few schools, notably the University of Oklahoma, have made rather extensive plans with specific hospitals. We need more of this type of initiative.

All of these aspects of medical preparedness are important to our nation's emergency readiness. There are really only two basic elements to the kind of nonmilitary defense this nation must have: people, as individuals, and government, at all levels. Both need all of the help they can get, not only from the A. M. A., but from all other organized groups, professional or social.

We in government are doing our best for nonmilitary defense. We know that you—individually and collectively—will do likewise. No one could ask for anything more.

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SPECIAL ARTICLE

NOMENCLATURE OF BLOOD CLOTTING FACTORS

FOUR FACTORS, THEIR CHARACTERIZATION AND INTERNATIONAL NUMBER

International Committee on Nomenclature of Blood Clotting Factors

Physicians often accuse basic scientists, chemists and physicists in particular, of using a strange language which no one outside their own subject can understand, but at least the majority of physicists or chemists can understand what others in their own field are talking about. The field of blood coagulation is one in which medical men and biological scientists have created such chaos that they do not even understand what other workers in the field are talking about, far less the clinician or the medical student.

To improve international communications is a worthy object at any time; to do so in the field of clotting factors has proved a task of major difficulty. To bring together the major workers not only from different countries but from the same country, hold them together, and persuade them of the importance of a simple understandable classification has been the problem for the chairman of the International Committee on Nomenclature of Blood Clotting Factors. This activity, of course, has much wider significance than just the field of blood clotting factors, and evidence for this wider significance has been the invitation by the National Advisory Heart Council of the United States to the members of this committee to or-

Members of the Committee are Drs. Irving S. Wright, New York Hospital (chairman); Prof. B. B. Hunter, Department of Pharmacology and Therapeutics, Queen's College, Dundee, Scotland (vice-chairman); T. Abe, Tokyo University Medical College; B. Alexander, Harvard Medical School, Boston; Tage Astrup, Biological Institute, Carlsberg Foundation, Copenhagen; Kenneth Brinkhous, University of North Carolina Medical School, Chapel Hill, N. C.; E. Deutsch, University of Austria Medical School, Vienna; P. Fantl, Baker Medical Institute, Alfred Hospital, Melbourne; H. Hartert, Medizinische Universitatsklinik (Ludolf-Krehl Klinik), Heidelberg, Germany; L. B. Jaques, Department of Physiology, University of Saskatchewan, Saskatoon, Canada; H. Jensen, U. S. Army Medical Research Laboratory, Fort Knox, Ky.; Prof. E. Jorpes, Karolinska Institute, Stockholm; F. Koller, Chefarzt der Medizinischen Abteilung der Krankenanstalt, Neumunster, Zurich, Switzerland; K. Lenggenhager, Direktor der Chirurgische Universitatsklinik, Bern, Switzerland; R. G. Macfarlane, Radcliffe Infirmary, Oxford, England; Willy Merz, University Clinic of Obstetrics and Gynecology of Lausanne, Lausanne, Switzerland; Pietro de Nicola, Pavia, Italy; Prof. P. A. Owren, Overlege, Rikshospitalet Medisinsk, Oslo; Alfredo Pavlovski, Buenos Aires; Armand Quick, Marquette University School of Medicine, Milwaukee; Laszlo Roka, Institute for Vegetativi Physiologie der Universitat, Frankfurt/Main Sud, Germany; Walter Seegers, Wayne University College of Medicine, Detroit; Pierre Soulier, Paris; and Marc Verstraete, Laboratoire de Physiopathologie, Louvain, Belgium (secretary).

ganize a series of international conferences within this field and to invite to these conferences young workers of exceptional promise so that they may listen to the discussion and benefit from the contact with their older colleagues from different countries in the world. The committee, therefore, is making a major contribution to international communications in medicine, and it is hoped that this type of activity will be seen more frequently as the world grows smaller and nations more fully accept the necessity for living and working together.

Work of the Committee

The story of this committee's work began at the first International Congress on Thrombosis and Embolism held in Basel in 1954, when the multiple names for identical substances emphasized that the problem of international communication was a serious one in this field. The International Committee for the Standardization of the Nomenclature of Blood Clotting Factors was established. Twenty-two members from 15 different countries were initially appointed. The list included the leading workers in the field, and most of the factors recently recognized had been discovered by these men. The first meeting brought into the open the fact that they had to a considerable extent created the problem, and they recognized that they had a moral and scientific responsibility to unravel it. It became clear that, though they had a paternal pride in the names of their choice, without their cooperation and compromise no progress could possibly be made. The efforts made by the members of the committee to yield their own strong positions for the common good have been noteworthy.

One of the first decisions made by the committee was that, whatever system of nomenclature was proposed, names should be avoided which implied an action by any factor. The reason for this had become clear when factors which previously had been given names implying function later were proved to have not that function but a different one. It was agreed that symbols should be used to designate blood coagulation factors until ultimately they were defined and identified in physical and chemical terms. However, certain essential physical and chemical data would have to be presented in support of the identity of any factor before the committee would give it an international symbol.

With further study and negotiation over a three-year period, it became evident that only a numerical system fully met these qualifications, and since some factors had already received Roman numerals in addition to their names it seemed logical to consider whether Roman numerals would be suitable as the international symbolic code, allowing the author freedom to use whichever synonym he wished. Thus, one would write factor V (proaccelerin), or factor V (labile factor). The Roman numeral would be intelligible in all languages, including the Oriental. The first four factors are widely known by their names and some identified chemically, and Roman numerals are perhaps less necessary. They are factor I, fibrinogen; factor II, prothrombin; factor III, thromboplastin (tissue); and factor IV, calcium. It seems likely that these names will continue in common usage, and in fact very few other names have been used for these factors.

One of the great problems facing the committee was to decide when sufficient evidence was available to justify any factor or activity being assigned a number. The following points were agreed on: 1. The minimal requirements for characterization of a clotting factor in whole blood, plasma, or serum shall be valid data on the reproducible effect on storage, adsorbability, inactivation by heating, and effect of pH. Additional chemical data are considered highly desirable if available. 2. A clinically identifiable state associated with an abnormality in the clotting mechanism shall be regarded as supporting the evidence for the lack or excess of a factor. 3. Methods of assay of physiological properties shall be listed. An appropriate selection of these methods will be considered as minimal for presentation of a factor before the criterion committee. In the case of previously undescribed factors the mechanism used for identification shall be clearly described by the author for study and possible acceptance by the committee.

Summary of Factors V, VII, VIII, and IX

The committee proposes to publish in detail elsewhere the criteria on which they have based their recommendation that four further blood coagulation factors should be recognized and assigned international symbols, namely, factor V, factor VII, factor VIII, and factor IX. A brief summary, however, is presented here.

Factor V.—Synonyms for factor V (Owren) include proaccelerin (Owren), labile factor (Quick), plasma ac-globulin (Ware and Seegers), thrombogene (Nolf), prothrombinase (Owren), prothrombokinase (Milstone), PPCF—plasmin prothrimbins—conversion factor (Stefanini), component A of prothrombin (Quick), prothrombin accelerator (Fantl and Nance), and cofactor of thromboplastin (Honorato).

Deficiency of this factor results in a hemorrhagic diathesis which is probably inherited and has been described as a parahemophilia or hypoproaccelerinemia. The first cause was recognized and described by Owren [1] in a beautiful study carried on under the most adverse conditions during the Nazi occupation of Norway, while Owren was at the same time an active member of the underground resistance. Several additional cases have since been described. This factor seems necessary for the for-

mation of the prothrombin converting substance in the blood and in tissue extracts. Other interesting properties are fully described in the literature.[2]

Factor VII.—Synonyms for factor VII (Koller) include proconvertin (Owren), SPCA—serum prothrombin conversion accelerator (deVries, Alexander), stabile factor (Stefanini), cofactor V (Owren), serozym (Bordet), kappa factor (Sorbye and Dam), prothrombinogen (Quick), cothromboplastin (Mann and Hurn), serum accelerator (Jacox), prothrombin conversion factor (Owren), and prothrombin converting factor (Jacox).

Factor VII plays a part in the production of at least three groups of abnormal states: 1. A congenital deficiency may produce hemorrhagic phenomena with purpura and bleeding from the mucous membranes. Many such cases have been described. 2. Acquired deficiency may occur in liver disease, in vitamin K deficiency, in the immediate neonatal period, and after the administration of prothrombinopenic agents, such as the coumarin derivatives used in anticoagulant therapy. 3. Excesses of factor VII have been found in certain states associated with a high incidence of thromboembolism, such as the third trimester of pregnancy. The level of this substance in the blood is species specific. Deficiency results in a quantitative prolongation of the one-stage prothrombin time test. Factor VII accelerates the conversion of prothrombin to thrombin in the presence of tissue thromboplastin, factor V, and calcium (Ca^{++}). It does not accelerate the interaction of platelet factor 3 and factors VIII and IX. It cannot rectify retarded coagulation due to factor V deficiency. It is not essential for thromboplastin generation in the coagulation of blood. Other interesting properties are fully described in the literature.[3]

Factor VIII.—Synonyms for factor VIII (Koller) include antihemophilic globulin (Patek and Taylor), antihemophilic globulin A (Cramer), AHF—antihemophilic factor (Brinkhous), PTF—plasma thromboplastic factor (Ratnoff), plasma thromboplastic factor A (Aggeler), TPC—thromboplastic plasma component (Shinowara), facteur antihemophilique A (Soulier), thromboplastinogen (Quick), prothrombokinase (Feissly), platelet cofactor (Johnson), plasmokinin (Laki), and thrombokatilysin (Leggenhager).

Factor VIII deficiency represents the classic hemophilia A, well known as the hereditary hemorrhagic disease which occurs almost exclusively in males but which is female sex-linked. The degree of factor VIII deficiency varies from patient to patient. Hemorrhage occurs in any tissue after minor injuries and is frequently serious. Factor VIII enters into the early stages of coagulation with factor IX and calcium ions to produce an intermediate product which reacts with platelet factor 3. The result of this reaction in the presence of factor V is an active agent in prothrombin conversion. It is essential in the formation of blood thromboplastin. A deficiency (1) prolongs the clotting time, (2) diminishes the thromboplastin formed, and (3) diminishes the prothrombin conversion.[4]

Factor IX.—Synonyms for factor IX (Koller) include Christmas factor (Biggs and Macfarlane), PTC—plasma thromboplastic component (Aggeler), antihemophilic globulin B (Cramer), plasma thromboplastic factor B (Aggeler), plasma factor X (Shulman), and facteur antihemophilique B (Soulier).

Factor IX deficiency produces hemophilia B or Christmas disease, named after the now-famous patient of Biggs and Macfarlane. This is usually a severe hemorrhagic disorder resembling hemophilia A and inherited in the same way. Studies of this disorder led to the discovery of factor IX. Factor IX, like factor VIII, is essential for the formation of intrinsic blood thromboplastin. It probably enters into reactions leading to the formation of this thromboplastin with calcium ions and factor VIII, an intermediate product which then reacts with platelet factor 3 and factor V. It influences primarily the amount of thromboplastin formed and not the rate of its generation.[5]

New Factors Under Consideration

A number of additional plasma and serum factors have been described by various workers who believe they have established that they play a role in physiological clotting of blood. These factors are now under study by the committee, and if the evidence indicates that the claims are valid they will be assigned a Roman numeral.

The ultimate contribution of this committee to medical understanding and education will depend on the willingness of educators, editors, and authors to adopt this system in their day-to-day efforts to create the medical thinking and literature of the future.

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DIAGNOSTIC PROBLEMS

PROGRESSIVE PULMONARY INSUFFICIENCY IN A 57-YEAR-OLD WOMAN

Clinical Pathological Conference (PM 1346-58), Oct. 9, 1958, from the Department of Pathology and the Hektoen Institute for Medical Research of Cook County Hospital, Chicago, presented for publication by Daniel S. Kushner, M.D., and Paul B. Szanto, M.D.

Clinical Data

A 57-year-old woman was admitted to Cook County Hospital on June 27, 1958, with complaints of profuse night sweats, intermittent high fever, and weakness of three weeks' duration. She also complained of headache, exertional dyspnea, and slight orthopnea, but no edema. She had had bronchial asthma for 32 years with intermittent symptoms, well controlled with ephedrine and proprietary drugs. History revealed measles, mumps, chicken pox, and whooping cough in childhood; several hospitalizations between 1928 and 1937 for bronchial asthma; and an admission for "bronchial pneumonia." She had been told she had a fibroid uterus, but she had refused an operation. Menarche occurred at the age of 9; menses had been regular, and her last menstrual period had occurred 12 years previously. She had been pregnant once but aborted. The patient had been born in Mississippi and had lived in Chicago for 26 years. She had worked for four years (about 1929) running machines in a dusty factory "making glue for paper work."

Physical examination disclosed an extremely obese, dyspneic, middle-aged woman with a relentless, violent, nonproductive cough. Her skin was dry and sallow. She was cyanotic, but had no clubbing of the digits. Her blood pressure was 106/70 mm.Hg., pulse 120 per minute, respirations 40 per minute, and temperature 102 F (39 C). Her scalp hair was "dry and falling out." Her facial features were masculine and hirsute. Funduscopic examination was negative. Diffuse rales and wheezes were heard throughout both lung fields. The heart was not enlarged; apical and radial rates were 120 per minute and regular, and no murmurs were heard. Her abdomen was obese, and no organs or masses were palpated. The extremities were normal; neurological examination and pelvic and rectal examinations gave negative results. A stool benzidine reaction was negative.

Urinalysis was normal. The hemoglobin level was 12.8 Gm. per 100 cc. (82%); the leukocyte count was 9,400 per cubic millimeter, with platelets adequate; the differential count revealed 44% neutrophils, 3% band forms, 10% eosinophils, 1% basophils, 32% lymphocytes, 7% monocytes, 1% myelocytes, and 2% metamyelocytes; 1+ anisocytosis, polychromatophilia, and 2+ toxicity were noted. A subsequent hemogram, on July 28, 1958, revealed a hemoglobin level of 16.1 Gm. (103%); leukocyte count 15,200 per cubic millimeter, with a differential count of 87% neutrophils, 1% eosinophils, 9% lymphocytes, and 3% monocytes; 1+ anisocytosis and toxicity. The hematocrit reading was 58% and 56% on two occasions. L. E. cell preparation was negative. Prothrombin time was 16 seconds (control 12 seconds). The blood Kahn reaction was negative. The blood urea nitrogen level was 12 mg. per 100 ml., total protein 6.7 Gm. per 100 ml., gamma globulin 1.32 Gm. per 100 ml., calcium 11.4 mg. per 100 ml., and cholesterol 148 mg. per 100 ml.; the sodium level was 142 mEq. per liter, potassium 7.3 mEq. per liter, and chloride 98 mEq. per liter; the icterus index was 8, cephalin flocculation 0, thymol turbidity 2.4 units, and carbon dioxide–combining power 32 ml. per 100 ml. Serum electrophoresis revealed only a slight increase in alpha$_2$ globulin.

Dr. Kushner is Associate Director of Medical Education, Cook County Hospital, and Instructor in Medicine, Northwestern University Medical School; Dr. Szanto is Director, Department of Pathology, Cook County Hospital, and Professor of Patholgy, Chicago Medical School.

Dr. Armstrong is Director of Medical Education, Cook County Hospital, and Professor of Medicine, University of Illinois.

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Electrocardiograms showed a semivertical electrical axis with clockwise rotation and prominent broad P waves, especially in leads 2 and AVF.

Roentgenogram of the chest revealed that the heart size was normal. The pulmonary artery segment was enlarged. Many miliary-sized nodules were scattered uniformly throughout both lungs. In addition to the small nodular densities, a homogeneous density in the left lung spared the left apex and left base. On July 7, the small nodular lesions appeared less discrete. On July 21, the small nodular lesions appeared slightly larger. On July 30, the homogeneous density in the left lung appeared denser. On Aug. 22, there was confluence of the nodular lesions in the right lung. The homogeneous density in the left lung appeared still denser.

Smears and cultures of bronchial secretion and sputum on three different occasions gave negative results for acid-fast bacilli. Mycologic culture of the sputum was negative. A tuberculin skin test gave positive results (1:10,000); skin tests with histoplasmin, blastomyces vaccine, and coccidioidin gave negative results. Arm-to-tongue circulation time (with use of sodium dehydrocholate [Decholin sodium]) was 8 to 10 seconds.

Bronchoscopy was negative. Pulmonary function studies on July 17 (see table) indicated marked arterial unsaturation and hyperventilation. Attempts to measure oxygen diffusing capacity were unsuccessful. Cardiac catheterization revealed pulmonary and right ventricular hypertension and elevated cardiac output but no evidence of heart failure. Further pulmonary function studies were not completed because of the patient's respiratory distress. Examination of a right scalene lymph node removed by biopsy revealed chronic lymphadenitis.

After an initial slight improvement, the hospital course was one of inexorable progression of dyspnea, cyanosis, and paroxysmal cough, productive of greenish sputum in small amounts, vague chest pain, increasing weakness, fatigue, anorexia, nausea, mental confusion, and faintness. The patient was generally afebrile, with occasional temperatures recorded at 100 F (37.8 C) and a single elevation to 101.2 F (38.5). She was treated with penicillin, streptomycin, isoniazid, para-aminosalicylic acid, pyridoxine, intermittent positive-pressure oxygen inhalation, ephedrine, epinephrine, aminophylline, codeine, potassium iodide, promazine, and aluminum hydroxide. Steroid therapy was instituted on July 26 with corticotropin and hydrocortisone and was subsequently maintained with cortisone. Considerable euphoria was its only apparent effect.

The patient was digitalized on Aug. 15. Her respiratory rate remained above 40 per minute, with forced, prolonged expirations, somewhat relieved symptomatically by aminophylline. There was tachycardia (pulse rate 140 per minute), tachypnea (respirations 46 per minute), and increased cyanosis. The patient died on Aug. 29, 1958, after a duration of illness of 11 weeks.

Clinical Discussion

Dr. S. Howard Armstrong Jr.: We have to consider the problem of a 57-year-old woman with an acute illness, characterized by chills, fever, and night sweats, suggesting an acute infection superimposed on at least 30 years of chronic respiratory disease.

She was born in one of the southern states and, at the time she is said to have acquired bronchial asthma, she had had a four-year exposure to a dusty factory where she worked making glue. What relationship does the paper industry bear to chronic pulmonary disease? The cellulose fiber itself has not been incriminated in the development of pneumoconiosis. A chronic pneumonitis is associated with both the sugar cane cellulose fiber and the cotton cellulose fiber. Bronchial asthma has been rarely associated with prolonged exposure to cotton cellulose. However, paper is made from wood, and wood is very sporadic in its capacity to produce allergy. This varies with wood species, and cabinet-makers

Physiological Data Obtained by Right Heart Catheterization

	Observed	Normal
Arterial blood		
Oxygen saturation, %	62	88-98
Carbon dioxide content, vol. %	45	45-50
Pressures, systolic/diastolic, mm. Hg		
Right atrium	12/0	0 to 3/0 to −3
Right ventricle	73/2	18 to 30/4 to 5
Pulmonary artery	73/27	18 to 30/6 to 12
Flow, cardiac output, liters/min.	8.65	5.5-7.0
Ventilation		
Oxygen uptake, ml./min.	361	225-300
Ventilation, liters/min.	11.2	5.0-7.5
Ventilatory equivalent	31	2.5

do occasionally develop allergic symptoms. On the other hand, exposure to the fine sawdust of most woods results in nothing more than sneezing and coughing. Red cedar wood has produced allergic manifestations but is not often used in paper.

With regard to glue, the older varieties were made from gelatin, which is not an allergenic substance and, more recently, casein and urea resins. Only more recently have other allergenic materials come into the glue industry. These are the synthetic epoxyresins which require an activator and which do cause apparent allergic reactions in the skin and respiratory tract. Finally, in paper factories, the processing of fibers is usually a wet process, and the dust content is not high.

Historically, the patient was said to have had uterine fibroids, suggesting the remote possibility of multiple pulmonary abscesses from necrotic and infected degenerated fibroids. The patient's obesity

and hirsutism at least raise the question of adrenal cortical hyperfunction (Cushing's syndrome). Although she had 12% eosinophils, the hypereosinophilia of polyarteritis nodosa and of allergic disease cannot be as readily eliminated by the administration of corticosteroids as can the normal eosinophilia. Therefore, while one cannot use the eosinophilia to exclude a state of hyperadrenal corticism, it is quite possible that the obesity and hirsutism are on the more common hereditary or familial basis. I wonder about the character of her respirations.

Dr. George Ricer: Her respirations were shallow and rapid. There was no evidence of supraclavicular retraction.

Dr. Armstrong: Then she probably did not have bronchiolar obstruction. Apart from an initial temperature of 102 F (38.9 C), her course was quite afebrile. Her heart was apparently of normal size, and she had little roentgenographic evidence of cor pulmonale. Bacteriologically, despite the fact that she had a constant, unrelenting, hacking cough, smears and cultures of both sputum and bronchial secretion revealed neither tubercle bacilli nor fungi. She did not expectorate material suggesting chronic bronchiectasis, lung abscess, or necrotic carcinoma. Skin tests gave negative results, except for the tuberculin test, which informed us that she had at one time responded immunologically to a tuberculous exposure. Some patients with generalized sarcoidosis (Boeck's sarcoid) have been known to develop a terminal miliary tuberculosis with a positive tuberculin skin reaction, and, therefore, one cannot exclude sarcoidosis on the basis of a positive Mantoux reaction. But this would be most peculiar miliary tuberculosis in a patient who had two months of specific antimicrobial therapy, with not only no change but actual progression of the roentgenographically defined pulmonary lesions.

With regard to the cardiopulmonary physiological evaluations, the first simple test gave a circulation time of eight seconds. This is unusually rapid and, together with the desaturation of the arterial blood (62% oxygen saturation) in this patient, forces consideration of the differential diagnosis between a pulmonary diffusion barrier with right heart failure and the possibility of a shunt. The remainder of the data showed a cardiac output of 8 liters, which, expressed in terms of cardiac index, would probably be just above the upper limits of normal. The right ventricular and pulmonary arterial pressure were elevated.

Among obstructive diseases of the pulmonary arteries, one must consider multiple pulmonary emboli, for which there is no evidence here. In sum, the physiological data, interpreted in the light of the clinical findings, suggest that the arterial oxygen unsaturation and pulmonary hypertension are the result of a diffuse parenchymal pulmonary process, offering some barrier to both gaseous diffusion and blood flow.

With the etiology undefined, after the course of various therapeutic trials, the pulmonary lesions tended to become larger and more confluent. The adrenal corticoids were probably given for the remote possibility of polyarteritis of the lung, with eosinophilia. Many unrelated types of pulmonary parenchymal disease of undefined etiology, including berylliosis, sarcoidosis, and the Hamman-Rich syndrome,[1] do respond somewhat to corticosteroid therapy, especially if treated early. The commonest lesion for a patient, even a woman in her 50's, with this history and findings, is carcinoma of the lung. Carcinoma of the lung may be silent while infection occurs behind it, resulting in night sweats, chills, and fever. A single or multiple abscesses may become walled off. Antibiotics result in only temporary remission; then the process progresses. Carcinoma of the lung does not necessarily produce a hematogenous spread; it may undergo miliary lymphatic spread, producing the type of lesions described roentgenographically in the patient.

In summary, this patient is an old asthmatic who has had some degree of pulmonary hypertension and a moderate amount of pulmonary arteriosclerosis. She more recently acquired carcinoma of the lung and developed lymphatic dissemination, which is much more likely to accentuate asthmatic symptoms than hematogenous dissemination with big nodules of metastatic tissue.

Dr. William Meszaros: The roentgenographic findings suggested diffuse miliary lung lesions with progressive confluence; miliary tuberculosis or carcinomatosis would produce this appearance. The homogeneous infiltration in the left lung is compatible with either chronic pneumonitis or neoplastic disease. From the roentgenologic point of view, an analysis of nodular pulmonary lesions includes consideration of inflammatory infections of bacterial, viral, or fungus etiologies. As far as neoplastic diseases are concerned, miliary metastases are quite common. The large lesion in the left lung would be hard to reconcile with metastasis. The absence of pleural effusion and the patient's rapid deterioration speak against inflammatory lesions, including tuberculosis. I would think the most likely possibility is bronchogenic carcinoma.

Dr. Louis Feldman: Within one month, this patient developed polycythemia. This again raises the question of a pulmonary diffusion barrier versus a cardiac shunt.

Dr. William Buckingham: Unfortunately, attempts to do a diffusion study using the Riley technique were unsuccessful because of the poor condition of the patient.

Dr. Earl Zaus: From the point of view of the radiologic changes, tuberculosis would not be the first thing to consider. Outstanding considerations would be (1) pulmonary adenomatous carcinoma, (2) lesions that belong to the interstitial fibrosing group, (3) fungus infection, and (4) the collagen diseases. This type of picture is not common in collagen disease. In 111 reported cases of polyarteritis nodosa, 14 of the patients had characteristic pulmonary findings of granulomatous lesions, not resembling those seen here. The same 14 also had a characteristic clinical picture.

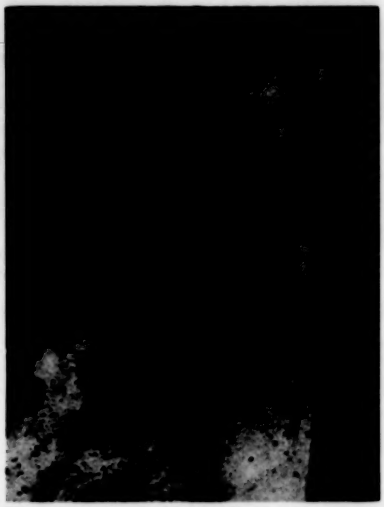

Fig. 1.—Extensive consolidation of lung seen on cut surface. Honeycombed appearance is due to emphysema.

Question: Why wasn't biopsy of the lung done, as the easiest way to confirm a diagnosis?

Dr. River: We had planned to do a lung biopsy, but the patient initially refused, and subsequently her condition rapidly deteriorated.

Clinical Diagnosis.—The clinical diagnosis was bronchogenic carcinoma with diffuse lymphangitic spread, superimposed on chronic bronchial asthma with pulmonary hypertension and pulmonary arteriosclerosis.

Pathologist's Report

Dr. Paul B. Szanto: At autopsy the heart was moderately enlarged (380 Gm.), due to moderate hypertrophy of the right ventricle. Histologically, the epicardium showed some lymphocytic infiltration. The liver (1,200 Gm.) and spleen (125 Gm.) showed passive congestion. The uterus was enlarged with fibroids. The adrenals were normal.

The lungs were heavy (1,200 Gm.). The pleura was smooth and shiny. The mucosa of the bronchial tree was injected; no endobronchial lesion was present. The consistency of the lungs was uniformly firm due to diffuse consolidation, and the cut section of both lungs showed a brown-pinkish-tan color (fig. 1). Large sections taken from the various segments of all lobes of both lungs revealed a fairly uniform involvement (fig. 2 and 3) of the emphysematous lungs. Only scattered small foci of distended air-containing alveoli remained uninvolved.

The lining epithelium of the bronchi was everywhere well preserved. The basement membrane of the bronchi was thickened, as seen in instances of long-standing bronchial asthma. The muscular layer was also thickened and infiltrated by lymphocytes as evidence of chronic bronchitis. Some pulmonary arteries showed intimal thickening with extreme narrowing of the lumen. The lumen of one medium-sized pulmonary artery was almost occluded by an organized thrombus.

Fig. 2.—Section through apical segment, showing uniform infiltration of alveoli. A few dilated alveoli appear in periphery of section.

The bronchi of the third order showed clusters of tumor cells invading their walls but not involving the mucosa proper. All the alveoli were uniformly involved and were lined by columnar epithelial cells of variegated appearance, with pleomorphic and hyperchromatic nuclei. Occasionally, there were papillary projections of the tumor cells lining the alveoli (fig. 4). The alveolar septums in some areas

were delicate, whereas others showed fibrous thickening. It should be pointed out that the slender connective tissue septums do not necessarily represent alveolar septums; septate stroma has been observed also in lymph node metastases of carcinomas of this type. The lumen of the bronchioles contained numerous desquamated columnar epithelial cells, intermingled with pleomorphic tumor cells.

On the basis of these findings, this is an alveolar cell tumor or, more properly, bronchiolar cell carcinoma, since it originates not from the alveolar but from the bronchiolar lining cells. Distant metastasis of this type of tumor is not frequent. In this case, the bronchial lymph nodes were not involved, but the left paratracheal lymph nodes were moderately enlarged due to replacement by tumor tissue.

We have recently observed in another case a circumscribed, nodular, and histologically better differentiated type of bronchiolar cell carcinoma in a 77-year-old woman. The apical segment of the left lower lobe revealed an indistinctly outlined gray-

Fig. 3.—Uninvolved bronchus with uniform infiltration of adjacent alveoli.

white gelatinous tumor measuring 2 by 2 cm. Microscopically, the alveoli in the area of the tumor were lined by high columnar epithelial cells, uniform in appearance, with the nuclei at the base of the cells (fig. 5 and 6).

Pathological Diagnosis.—The pathological diagnosis was bilateral diffuse bronchiolar (alveolar cell) carcinoma; secondary diffuse pulmonary fibrosis and hypertrophy of the right ventricle; metastasis to the tracheobronchial lymph nodes; passive congestion of liver and spleen; obesity; and uterine fibromyomas.

Comment

Dr. Szanto: Malignant tumors of the lung are classified as (1) primary epithelial tumors, including bronchial adenoma (carcinoid and cylindroma),

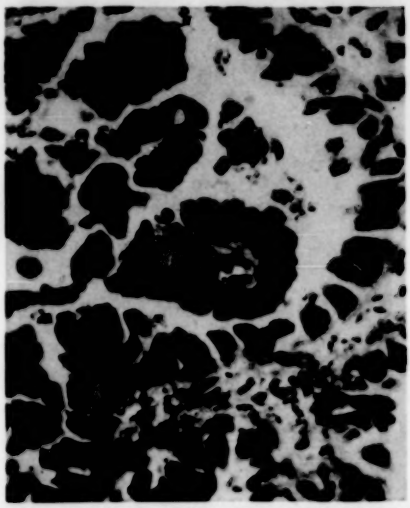

Fig. 4.—Lining of alveoli by columnar epithelium with large pleomorphic, hyperchromatic nuclei.

bronchogenic carcinoma (epidermoid carcinoma, adenocarcinoma, undifferentiated large cell carcinoma, and undifferentiated small [oat cell] carcinoma), and bronchiolar carcinoma; (2) sarcoma, including undifferentiated (pleomorphic) sarcoma, differentiated fibrosarcoma, leiomyosarcoma and chondrosarcoma; (3) carcinosarcoma; (4) mesothelioma; (5) lymphoma (lymphocytic lymphosarcoma and Hodgkin's disease); and (6) metastatic carcinoma and sarcoma. (Bronchial adenomas are histologically benign tumors. The cylindrical type of adenoma has a tendency toward invasion of the wall. Bronchial adenomas may metastasize to the regional lymph nodes.)

Adenocarcinoma of the bronchus may possibly originate from large bronchi or from smaller segmented bronchi in the periphery of the lung; then the differential diagnosis between peripheral adenocarcinoma and bronchiolar carcinoma may become difficult. I would stress, however, three points of importance: 1. Adenocarcinoma of the bronchi metastasizes early and widely by the hematogenous route; distant metastasis from bronchiolar

carcinoma is rare, as pointed out before. 2. Bronchiolar carcinoma is usually better differentiated than adenocarcinoma. 3. Bronchiolar carcinoma fails to show necrotic changes.

The term bronchiolar adenoma, one of the many synonyms of bronchiolar carcinoma (primary multiple alveolar cell tumor, pulmonary alveolar adenomatosis, alveolar cell carcinoma, diffuse lung carcinoma, diffuse primary alveolar carcinoma, multicentric alveolar cell carcinoma, papillary gelatinous alveolar carcinoma, and bronchiolar carcinoma), has been used [2] because of the relatively benign histological appearance of the tumor, but I would stress that despite their benign histological appearance, these tumors are always malignant. The etiology of alveolar cell carcinoma is intriguing because a similar type of pulmonary lesion has been observed in sheep as a rapidly progressive process, endemic to South Africa, interpreted as a viral infection. It is known as jagziekte, and it results in death of the affected animal two to eight months after onset. It is stated that bronchiolar carcinoma

Fig. 5.—Lining of alveoli by high columnar cells with uniform nuclei, pale cytoplasm, and mucinous material in alveolar lumens.

makes up about 5% of all lung tumors in men, and in our own material it approximates this incidence.

Bronchiolar cell carcinoma presents a pathological, anatomic, and clinical entity, occurring with equal frequency in males and females. The clinical symptomatology is dominated by the expectoration of large amounts of mucoid sputum (daily, 100 cc. or more with admixture of streaks of blood), stubborn irritating cough, dyspnea, cyanosis, and night sweats. In the expectorated material, frequently one has the opportunity to demonstrate malignant cells. In this case, the characteristic expectoration of odorless, watery mucus was absent.

Fig. 6.—High-power view of lining of alveoli by high columnar epithelial cells with uniform nuclei, pale cytoplasm, and mucinous material in alveolar lumens.

Grossly, the tumor may be segmental (circumscribed) or diffuse, involving a large part of one or both lungs. The diffuse type of bronchiolar carcinoma (as in the case under discussion) may be of multicentric origin, or it may rapidly spread from a single focus by both bronchogenic and lymphogenic dissemination. The question of unicentric versus multicentric origin has important therapeutic implications. Doubtless, the importance of multicentric origin of this tumor has been overemphasized in the past. In all probability, bilateral involvement of the lung usually results from bronchogenic and lymphogenic spread from a rapidly metastasizing carcinoma of unicentric origin.

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STRENGTHENING THE SINEWS OF UNDERSTANDING

IN THIS issue (page 280) is published the address of the President of the American Medical Association, Dr. Gunnar Gundersen, delivered before the recent annual meeting of the Federation of State Medical Boards.

Dr. Gundersen has been widely quoted in the press as advocating that steps be taken in the immediate future to insure that physicians keep abreast of medical advances by requiring them to be reexamined periodically in order to retain their licenses to practice. A large response to the news references has come from physicians.

Dr. Gundersen was not certain which method was best to stimulate physicians to continue their education. He said: "This is a matter for careful study by all concerned." Dr. Gundersen's suggestion is not without precedent. In 1937, then A. M. A. President J. H. J. Upham said to the House of Delegates, "There is already a trend toward compulsory evidence of postgraduate improvement. . . . In several states there are laws requiring annual registration of physicians. . . . There is the possibility that the next step might be as a requirement for renewal of licensure evidence of familiarity with the developments in medicine by five or ten year periodic examinations." [1]

The American Medical Association was founded in 1847 because of the concern of leaders in the profession with the low standards of medical education and of medical practice at that time. The Association ever since has steadfastly initiated and continued activities whose goal has been the elevation of standards of medical education at all levels to assure the highest attainable quality of medical care.

The profession has supported increasing programs of research—programs that have harvested an abundantly rich yield of new knowledge. Millions of dollars and the skills of thousands of physicians and other scientists pour into the research effort to develop new knowledge applicable in medicine to disease prevention and to the better diagnosis and therapeusis of disease.

Research is the means of producing new knowledge, but education is the means of its distribution. It is entirely appropriate that the medical profession be concerned with the distribution of new knowledge as thoroughly and as broadly as possible. Until advances in medicine are applied by physicians in patient care, they are ineffectual.

The use of the more significant advances requires a new synthesis of knowledge and a deepened understanding of disturbed biochemical and metabolic relationships. Such discoveries can be two-edged tools—capable of inflicting harm when used with insufficient understanding or of producing great benefit when used appropriately. Often the most significant advances are new insights into the basic processes of normal and disturbed body function, thus making medicine more rational and less empirical. Such discoveries must be fitted into the fabric of other related knowledge in each physician's mental armamentarium. Obviously initial education and training, no matter how excellent, is only a beginning of medical education, not the end.

The problem is how to maintain, in the light of ever-increasing knowledge, the superior competence with which doctors enter the profession. For the sake of the public it serves, how can the medical profession in active practice best be assisted to remain close to the summit of knowledge available?

As the profession long ago took the initiative in elevating the standards of education and fitness required to enter practice, now it is coming to grips with new challenges, among which is that of closing the gap between research and its application in practice. As the tempo of research accelerates, its effective dissemination becomes more urgent.

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ORGANIZATION SECTION

TELEVISION SERIES FOR THE ATLANTIC CITY MEETING

A series of four half-hour television programs summarizing top scientific events will be a feature of the American Medical Association's 108th Annual Meeting in Atlantic City. Originating at 5:30 p. m. Monday through Thursday from a special studio in Convention Hall, the American Medical Association's "Bulletin of the Air" will be seen in the Philadelphia–Atlantic City area over WFIL-TV, channel 6. On each telecast, meeting participants who made scientific "news" during the day will present capsule reports to the television audience. The programs—featuring Philadelphia newscaster Taylor Grant—will be designed to keep physicians informed of newsworthy events and at the same time show the general public what goes on at an A. M. A. meeting. Film recordings made of the "live" telecasts will be edited into motion picture "Highlights of the 108th Annual Session" for fall distribution to medical meetings throughout the country. Both the television programs and the filmed "Highlights" will be presented by the American Medical Association in cooperation with Merck, Sharp & Dohme. Serving as consultant in selection of program material is Dr. Stanley P. Reimann, Philadelphia, Chairman of the A. M. A.'s Council on Scientific Assembly.

GOLF TOURNAMENT DURING ATLANTIC CITY MEETING

The 43rd Annual Tournament of the American Medical Golfing Association will be held at the Seaview Country Club, Absecon, N. J., on June 8, 1959. The hours of teeing off are from 8 a. m. to 2 p. m. All male members of the A. M. A. are eligible for membership. The tournament fee of $25 will include green fees, luncheon, banquet, and prizes. New fellows pay an enrollment fee of $3 for lifetime membership. Private cars or taxis from Atlantic City are recommended as the best means of transportation. Arrangements may be made to pick up groups at their hotels in Atlantic City. Reservations and checks may be sent to Dr. Mario A. Castallo, 1621 Spruce St., Philadelphia 3.

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GOVERNMENT SERVICES

ARMY

New Surgeon General.—Major Gen. Leonard D. Heaton has been named surgeon general to succeed Major Gen. Silas B. Hays whose term expired on April 30. General Heaton, who was commanding general of Walter Reed Army Medical Center, operated on the President for ileitis in 1956.

VETERANS ADMINISTRATION

Cord Injury Center.—One of the most complete hospital facilities ever designed for care of patients with spinal cord injuries is now in operation at the Veterans Administration hospital at Long Beach, Calif. This spinal cord injury center cares for 205 patients in the hospital and for 980 outpatients, and it has a separate section to handle visits of former patients who are working at various jobs in the area. The facilities for paraplegic and quadriplegic patients occupy the first floor and lower level of a new 296,000-sq. ft. expansion of the hospital, which replaced 20 temporary buildings on the site. The upper floors of the four-level expansion are used for general hospital activities.

Doctors' and other specialists' offices are located on one side of the first floor corridor of the central core, with treatment facilities and consultation rooms directly across the hall from each office. Patients' rooms and ward areas are located in the five wings of the first floor. Medical and vocational rehabilitation areas are in the lower level. The center has an exercise clinic, a cystoscopy clinic, a central bath area, a therapeutic pool, and specially designed brine tanks.

PUBLIC HEALTH SERVICE

Division of Water Pollution Control.—The Secretary of Health, Education, and Welfare has created a Division of Water Pollution Control. In the past two years, water pollution control activities have been carried out in the Water Supply and Water Pollution Control Branch of the Division of Sanitary Engineering Services. The new division will be in a better position to conduct the broad program of research, to accumulate necessary data on water supplies, conduct training, and administer enforcement activities and construction grants under the Water Pollution Control Act of 1956. Gordon E. McCallum, who is chief of the Water Supply and Water Pollution Control Branch, will be in charge of the new division.

MEDICAL NEWS

ALABAMA

Surgical Meeting in Huntsville.—The International College of Surgeons, Alabama Surgical Section, will meet May 21-22 at the Russel Erskine Hotel, Huntsville. Four panel discussions are planned with the following titles and moderators:

Obstetrics, Dr. Julian Hardy, Birmingham.
Orthopedic Surgery (Whiplash Injuries), Dr. Paul Shannon, Birmingham.
Gynecology, Dr. Gilbert F. Douglas Sr., Birmingham.
Abdominal Surgery, Dr. Claude J. Hunt, Kansas City, Mo.

At the banquet, May 21, 7:30 p. m., Dr. E. V. Caldwell, Executive first vice-president of the Alabama Section, will preside, and guest speaker will be Senator Lister Hill. For information, write Dr. E. V. Caldwell, 2515 Memorial Parkway, Huntsville, Ala.

ALASKA

New Journal for Alaska Physicians.—The first issue of *Alaska Medicine* was published for March. The new publication was accepted as the official journal of the Alaska State Medical Association at its annual meeting March 20. The journal will be published quarterly, in March, June, September, and December. As explained in the first volume editorial, although Alaska has scarcely 100 practicing physicians "there is a pressing need for communication among physicians in Alaska." The first issue is being distributed free of charge to all physicians in the state and to all medical school libraries and state medical societies in the United States. Suggestions and contributions are invited. Proposed for future issues are a clinicopathological conference, a column devoted to news and current activities, review articles, a section devoted to the history of medicine in Alaska, and a "Letters to the Editor" column. Dr. William O. Maddock, 423 D St., Anchorage, is the editor of the journal, and Dr. William J. Mills Jr., is the editor-in-chief.

ARKANSAS

Dr. Krantz Goes to Kansas.—Dr. Kermit E. Krantz, assistant professor of obstetrics and gynecology, University of Arkansas Medical Center, Little Rock, resigned to become professor and chairman of the department of obstetrics and gynecology, University of Kansas Medical Center, Kansas City. His new appointment is effective July 1. Dr. Krantz is the first University of Arkansas man to receive the Markle Foundation award "given to young educators and researchers who show unusual promise in the field of medical science." In 1950, he joined the University of Vermont faculty, where he was promoted to assistant professor in obstetrics and gynecology.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

COLORADO

Dr. Altemeier Gives Clagett Lecture.—Dr. William A. Altemeier, chairman, department of surgery, University of Cincinnati, delivered the annual Clagett Lecture at the University of Colorado Medical Center, Denver, April 10, on "Studies in Septic Shock."

Establish Raymond R. Lanier Lectureship.—A lectureship in memory of the late Dr. Raymond R. Lanier of the faculty of the University of Colorado School of Medicine, Denver, was announced by Dean Robert J. Glaser. The first Lanier Lecture was given April 22 at the Medical Center by Dr. Louis H. Hempelmann, professor of experimental radiology, University of Rochester (N. Y.) School of Medicine, on "Malignant Disease in Irradiated Human Populations Exposed to Ionizing Radiation." Dr. Lanier was fatally injured last Nov. 24 near Holyoke when struck by a car during a hunting trip. He joined the university faculty in 1950 as head of the department of radiology, coming to Denver from the University of Chicago Clinics.

Nuclear Society Meeting.—On May 20 the Colorado Chapter of The Nuclear Society, a national organization of physicians, is holding its second annual regional meeting at the Denver Veterans Administration Hospital, sponsored by the University of Colorado. The meeting will occupy the entire day and will close with the annual dinner in the evening, when Col. Benjamin P. Blasingame, professor of astronautics at the Air Force Academy, will address the society on "Space Travel, Sense or Nonsense." The program will be presented by experts in nuclear medicine, recruited from the university, the Army, the Air Force, and from members of the local faculty of the Medical School and the V. A. staff. For information write Dr. Thad P. Sears, chief of Medical Service, Veterans Administration Hospital, 1055 Clermont St., Denver 20.

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DISTRICT OF COLUMBIA

Building Dedications Mark Convocation.—The Georgetown University Medical Center was highlighted in ceremonies of the university's Spring Convocation March 19. In a morning ceremony two new buildings were dedicated—the 3-million-dollar Lawrence C. Gorman Diagnostic and Research Building and the $1,227,000 Kober–Cogan Dormitory for medical and dental students. Construction was begun on the Gorman Building in September, 1957. Constructed of brick, aluminum, and glass, the edifice has four stories and a basement. It is a memorial to the late Lawrence C. Gorman, S.J., president of Georgetown University from 1942 to 1949, under whose administration the University Hospital was erected. Dentistry and Nursing, as well as medicine, will be provided for in the new building. The 375-seat auditorium will include a projection booth with several interpreters' booths. Some of the departments to be established in the building are physical medicine, radioisotope unit, obstetrics and gynecology, outpatient department, psychiatry, pediatrics, practical nursing, dentistry,

The Laurence C. Gorman Diagnostic and Research Building, Georgetown University Medical Center, Washington, D. C.

hematology and pathology laboratories, urology research laboratory, and surgical research metabolic laboratory. The Kober–Cogan Dormitory for medical and dental students stands in the university's Medical Center Area, to the east of the new Gorman Diagnostic and Research Building. Air-conditioned throughout, the dormitory houses 200 students in double rooms, has six stories and a basement, and honors the memory of Dr. George M. Kober, dean of the Georgetown School of Medicine from 1900 to 1929, and Dr. William N. Cogan, first dean of the School of Dentistry. Other activities of the convocation included the conferring of honorary doctor of science degrees on Clemens V. Rault, D.D.S., dean of the School of Dentistry; Dr. Alfred Blalock, Johns Hopkins University surgeon; and Dr. Fred R. Sanderson, professor emeritus of surgery at Georgetown. President Sean T. O'Kelley, of the Republic of Ireland, was presented a citation, and the Gorman Building ceremonies were closed with an address, "The Challenge of Medical Education Today," by Dr. Hugh H. Hussey, dean of the School of Medicine.

FLORIDA

Plan Alumni Organization.—First steps toward formation of an alumni association of the University of Miami School of Medicine were taken at a meeting held at the school in Coral Gables April 6. Representatives of the three classes already graduated by the school, together with members of the class of 1959, voted to set up organizational machinery as quickly as possible. Dr. Arthur Radin was named chairman pro tem for the new association. A committee was appointed to work with him in drafting by-laws, outlining a program, and setting up a schedule for future meetings.

Society News.—The newly elected officers of the North Florida Radiological Society for 1959 are Dr. Marvin H. Johnson, Jacksonville, president, and Dr. Paul A. Mori, 800 Miami Road, Jacksonville, secretary. The North Florida Radiological Society is composed of radiologists from North Florida and South Georgia. Meetings are held quarterly in Jacksonville.——The election of new officers by the Greater Miami Radiological Society, held Jan. 21, was as follows: president, Dr. Richard D. Shapiro, Miami Beach; vice-president, Dr. Andre S. Capi, Hollywood; and secretary-treasurer, Dr. George P. Daurelle, Jackson Memorial Hospital, Miami. The meetings are held on the third Wednesday of each month at 8 p. m. at Jackson Memorial Hospital.

County Society Combats Tetanus.—Dade County Medical Association learned through the county health department that tetanus occurs seven times more frequently in Dade County than in the rest of the country and kills over half its victims. Association members had already conducted a successful poliomyelitis inoculation drive. To avoid misunderstandings and assure cooperation, Dade County sent each doctor a letter explaining why and when the antitetanus drive was to begin and suggesting he keep Friday afternoons and Saturday mornings free for vaccinating working people without appointments. A cardboard plaque was enclosed to post in the reception room as a reminder to patients. Doctors were urged to participate regardless of specialty. Next, a news release was sent to all papers with a fact sheet containing information on tetanus for background stories. Seven spot announcements were furnished to radio and TV stations. Six talks were given over radio and five TV shows arranged by the association's PR Committee. Announcements were displayed on post office bulletin boards and sent to 278 clubs throughout the county. Thirty-one thousand shots were given during the month-long campaign, according to Executive Secretary John Hanni.

ILLINOIS

Meeting of Anesthesiologists.—On May 17 the Illinois Society of Anesthesiologists will hold its annual meeting at the Sherman Hotel, Chicago. The morning will be devoted to a panel discussion, "Fluothane," moderated by Dr. Richard E. Lyons, Chicago, and including the following speakers: Drs. John Abajian, Burlington, Vt., Charles B. Pittinger, Iowa City, C. R. Stephen, Durham, N. C., and Harold L. Harris, Evanston. The afternoon speaker will be Dr. Henry K. Beecher, Boston, who will discuss "Pain." For information write Dr. Clifford A. Baldwin Jr., 522 Maple Ave., Wilmette, Secretary-Treasurer.

Organize Ileostomy Group.—Under the guidance of Dr. Joseph B. Kirsner, department of medicine of the University of Chicago, an organization known as the Ileoptomists of Chicago has been organized for the purpose of helping patients in the proper care and adjustment to their ileostomies. Meetings are held regularly on the last Monday of each month at 6:30 p. m. at the Fabric Salesman's Club, 222 W. Adams St. The organization has announced that they welcome new members and are eager to cooperate with all who may wish to avail themselves of the help provided by this group. Any patient with an ileostomy interested in joining the organization may contact the secretary, Mrs. Lee Vance of 330 Ridge Road, Barrington, Ill. (telephone: DU 1-1496). The president is Mr. Mat Martel. His address is 27 S. Elm. St., Northlake, Ill. (telephone: FI 3-9041). Physicians interested in attending meetings and in the general purpose of the Ileoptomists should contact Dr. Kirsner at MU 4-6100, Ext. 5563.

Chicago

Dr. Breinin to Give Memorial Lecture.—The Edward Lorenzo Holmes Memorial Lecture, "Contributions of Electromyography to Strabismus," will be given by Dr. Goodwin M. Breinin, professor of research ophthalmology, New York University–Bellevue Medical Center, New York City, the evening of May 18 at a joint meeting of the Chicago Ophthalmological Society and the Institute of Medicine of Chicago at the Palmer House.

Dr. Dawson Wins Surgical Prize.—The 1959 Chicago Surgical Prize for Surgical Research has been awarded to Dr. Donald Dawson, working at the University of Chicago, for his paper, "Plasma Sterilization—An Experimental and Clinical Study on Selective Destruction of Bacterial Nucleoproteins Without Plasma Denaturation." This year's prize check of $500 was donated by Dr. Edwin M. Miller. Dr. Dawson's paper was presented at the meeting of the Chicago Surgical Society May 1.

LOUISIANA

Dr. Farber Awarded Cancer Grant.—A grant creating another American Cancer Society professorship in cancer research was made to Tulane University School of Medicine, New Orleans, to support the lifetime cancer research of Dr. Emmanuel Farber. Dr. Farber has been working in pathology and biochemistry since 1947, when he received an American Cancer Society research fellowship at the University of California. Later he received a society research fellowship at Hektoen Institute for Medical Research in Chicago. From 1951 to 1955, he was an American Cancer Society scholar in research at Tulane. Dr. Farber's is the seventh lifetime cancer research professorship established by the society. In creating Dr. Farber's research professorship, the society established a $100,000 trust fund as a guarantee and will pay the scientist's annual salary out of funds raised each year until the trust and accrued interest are sufficient to pay the remaining years of the grant. In the event cancer is brought under control and the society disbands, the $100,000 trust fund goes to the institution for continued medical research. If for some reason, Dr. Farber is unable to carry on his research work, the trust fund reverts to the society.

MASSACHUSETTS

Annual Meeting in Boston.—The 178th anniversary meeting of the Massachusetts Medical Society will be held May 19-21 at the Statler Hilton Hotel, Boston, under the presidency of Dr. Charles C. Lund. Three films will be shown: "Cineradiography as a Routine Diagnostic Study," "Open Heart Surgery," and "Recognition and Management of Respiratory Acidosis." The annual discourse will be given by Dr. Henry F. Howe, Cohasset, on "Procedures in Consultation and Referral." A mock trial on "A Motor Vehicle Liability Case with Attendant Medical Problems for Trial Before a Jury" is planned for May 19, 3:30 p. m., with Dr. James F. Kenney, as chairman. The Shattuck Lecture will be given by Dr. Robert E. Gross on "Open Heart Surgery." Section meetings and luncheons are planned, and the following panel discussions and moderators are arranged:

The Selective Use of Whole Blood, Blood Components and the Complications of Transfusion Therapy, Dr. Mark F. Lesses, Boston.

Surgical Sepsis, Dr. Carl W. Walter, Boston.

Medical Fees for the Insured Patient, Dr. David W. Wall-Work, North Andover.

Guest speaker at the annual banquet May 20, 7 p. m., will be Gen. Alfred M. Gruenther, president, American National Red Cross. Scientific exhibits are arranged. The annual golf tournament will be held May 19 and an exhibition of works of art by society members, May 21. For informaton write Dr. Robert W. Buck, 22 The Fenway, Boston, Secretary.

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MICHIGAN

Dr. Ruedemann Honored.—For his "noteworthy contributions to ophthalmology," Dr. Albert D. Ruedemann, chairman, department of ophthalmology, Wayne State University College of Medicine, Detroit, received the Lucien Howe award from the University of Buffalo April 9. The Howe award is given annually "to an outstanding ophthalmologist." Dr. Ruedemann is director of Kresge Eye Institute and also heads the departments of ophthalmology at Detroit Receiving and Harper hospitals. He organized and headed the department of ophthalmology at Cleveland Clinic for 23 years.

MINNESOTA

Annual Meeting in Duluth.—The Minnesota State Medical Association will hold its annual meeting May 25-27 at the Hotel Duluth, Duluth. Panel discussions and moderators will include the following: "What's New in Cardiovascular Disease," Dr. F. J. Hirschboeck, Duluth, and "Management of Strokes," Dr. Ina A. Brown, St. Paul. Special lectures are scheduled as follows:

Russell D. Carman Memorial Lecture, "Breakthroughs in the Solution of the Stroke Problem," Dr. James E. Lofstrom, Detroit.

Minnesota Academy of Ophthalmology and Otolaryngology Lecture, "Use of Steroids in Ocular Disease," Dr. John E. Harris, Minneapolis.

Arthur H. Sanford Lecture in Clinical Pathology, "A Clinical and Pathological Comparison of Chronic Glomerulonephritis and Malignant Hypertension," Dr. Elexious T. Bell, Minneapolis.

Minnesota Medical Foundation Lecture, "Streptococcal Infections and Their Complications," Dr. Lewis W. Wannamaker, Minneapolis.

Northwestern Pediatric Society Lecture, "Nutritional Requirements of the Neonate," Dr. Theodore C. Panos, Little Rock, Ark.

Symposiums will be held on breast cancer, massive gastrointestinal bleeding, urological problems, and staphylococcus infections. Round-table luncheons and technical exhibits are planned. A gold tournament, skeet and trap events, and boat trips are arranged. The annual banquet ($6) will be held May 26, 7 p. m., with Dr. E. W. Ziebarth, dean, summer session, University of Minnesota, speaking on "Russia Today." For information, write Mr. Harold W. Brunn, 496 Lowry Medical Arts Building, St. Paul 2, Executive-Secretary.

MISSOURI

Open Division of Child Psychiatry.—Washington University's new William Greenleaf Eliot division of child psychiatry was opened officially at an open house at the former Mission Free School, 369 N. Taylor Ave., St. Louis, April 12. The new division, housed in the three-story Mission Free School Building, will be directed by Dr. E. James Anthony, Blanche F. Ittleson professor of child psychiatry at the university. The new division was named for Dr. Eliot, who founded the Mission Free School in 1840. He later was a founder of Washington University and its first chancellor. The Eliot division of child psychiatry will be composed of two units: the Child Evaluation Clinic, for diagnosis and treatment of mentally retarded children, and the Community Child Guidance Clinic, for emotionally disturbed children.

MONTANA

Dr. Harris Named Secretary-Treasurer.—At the 12th interim session of the Montana Medical Association, April 3-4, the House of Delegates elected Dr. William E. S. Harris, Livingston, to the office of secretary-treasurer to succeed the late Dr. T. R. Vye. Dr. Harris has served as assistant secretary-treasurer from September, 1957, until the death of Dr. Vye, when he became acting secretary-treasurer. Dr. Jesse T. Schwidde, 1231 N. 29th St., Billings, was elected assistant secretary-treasurer. Dr. Schwidde and Dr. Harris will hold office until the next regular election, held during the annual meeting in September.

NEW YORK

Foreign Lecturer.—Sir Howard W. Florey, professor of pathology, Sir William Dunn School of Pathology, University of Oxford, England, presented a lecture, "The Properties of Endothelium," April 24 at the University of Buffalo School of Medicine.

Personal.—On Feb. 5, Dr. Harold A. Abramson, chief of the psychobiology section, Biological Laboratory, Cold Spring Harbor, at the invitation and under the auspices of the National Research Council of Canada, gave a public lecture in Ottawa on "Explorations in the Chemistry of Mental Processes."—Dr. Joseph F. Rudman has been appointed Health Commissioner for the Clinton County Department of Health, effective Feb. 1.

Allergy Meeting.—The New York Allergy Society will hold a meeting May 20 at the Beekman Tower Hotel, First Avenue and 49th Street, New York City. The scientific session will be: "Studies on Gamma Globulins: Clinical Significance for the Allergist," by Dr. Paul A. M. Gross, research fellow in pediatrics, Harvard Medical School, research fellow in medicine, Children's Hospital, Boston. The scientific session at 8:30 p. m. is to be preceded by a dinner at 7:15. For information, write Dr. Sheppard Siegal, Secretary, The New York Allergy Society, 2 E. 84th St., New York 23.

Meeting of Surgical Section.—The International College of Surgeons, New York Surgical Section, will meet May 28-31 at the Concord Hotel, Kiamesha Lake, N. Y. The chairman of the scientific

program committee is Dr. Henry P. Leis Jr. A motion picture program is planned and the scientific program will have the following panel titles:

Newer Concepts in the Surgical Treatment of Peptic Ulcer.
The Treatment of Thyroid Disease.
Therapy of Advanced Breast Cancer.
Problems in Obstetrics and Gynecology.
The Management of Patients with Multiple Injuries.
Problems in Proctology.
Reconstructive Surgery.
Therapy of Intractable Pain.
Cardiopulmonary Emergencies of Interest to the General Surgeon.
Bioatomic Medicine and Civil Defense.

New York City

Dr. Wechsler Honored.—The Hebrew University of Jerusalem honored Dr. Israel S. Wechsler by establishing the Israel Wechsler Chair of Neurology at the Hebrew University–Hadassah Medical School.

Annual Lecture.—The 25th annual Edwin A. Jarecki Memorial Lecture was delivered at the Northern Division of the Albert Einstein Medical Center April 29 by Dr. Ludwik Gross, chief, Cancer Research Unit, Veterans Administration Hospital, Bronx, and associate scientist, Sloan–Kettering Institute, Memorial Center. His topic was "Viral Etiology of Mouse Leukemia; Its Possible Implications for the Problem of Cancer in General."

Dr. Rawson Receives Goiter Award.—The American Goiter Association presented its "Long and Meritorious Service Award for those of its members who had contributed significantly to the scientific and business affairs of the Association" to Dr. Rulon W. Rawson, professor of medicine, Sloan–Kettering Division, Cornell University Medical College, May 1. Dr. Rawson has served on the council of the association, has been chairman of many of its committees, and was president in 1955-1956. He worked in the Thyroid Clinic of the Massachusetts General Hospital, Boston, and served on the faculty of Harvard University. He directs the Division of Clinical Investigation of the Sloan–Kettering Institute.

Summer Course on Pharmaceutical Librarianship.—The Columbia University School of Library Service announced that during the 1959 summer session a special course on Pharmaceutical Literature and Librarianship will again be offered. The instructor will be Miss Winifred Sewell, librarian, Squibb Institute, New Brunswick, N. J. The course will provide a survey and evaluation of library materials in the field of pharmacy. Designed as advanced training for professional librarians now in service, the course has been scheduled to meet two hours daily from Monday through Friday for the first three weeks of the Summer Session, July 6-24, 7-8:40 p. m. Classes will meet at the College of Physicians and Surgeons at the Columbia University Medical Center. The fee for the course is $111, plus a registration fee of $10. Admission requires a bachelor's degree. Applications for admission, and information about related courses may be obtained from the School of Library Service, Columbia University, New York 27.

OREGON

Goiter Essay Award to Researcher.—The Van Meter prize of the American Goiter Association ($300), for the best work on the subject of goiter was awarded to Dr. Takashi Yamada for his "Studies on the Mechanism of Hypothalamic Control of Thyrotropin Secretion in the Rat." Dr. Takashi Yamada, a native of Japan, has M.D. and Ph.D. degrees from Gunma University. Since September, 1957, he has been a research fellow in the Division of Endocrinology at the University of Oregon Medical School, Portland, where he works under the direction of Dr. Monte A. Greer.

PENNSYLVANIA

Philadelphia

Annual Hospital Banquet.—The annual banquet of the Ex-Interne and Resident Association of the Hospital of the University of Pennsylvania will be held on Friday, June 12, at the Warwick Hotel, Philadelphia, beginning at 6 p. m. For information, write Dr. John W. Greene Jr., 104-6 Dulles Building, University Hospital, 3400 Spruce St., Philadelphia 4, Secretary.

Neurosurgical Meeting.—The first meeting of the newly organized Philadelphia Neurosurgical Society was held at the Jefferson Medical College May 15. Active members in this organization include all neurological surgeons from the State of Pennsylvania. Invited guests for this meeting were present from the District of Columbia, Maryland, Delaware, and New Jersey. Counselors and organizers of the society are Drs. Robert A. Groff, J. Rudolph Jaeger, Axel K. Olsen, and Michael Scott. Elected to officiate at this first meeting were president, Dr. Francis C. Grant; vice-president, Dr. Temple S. Fay; and secretary-treasurer, Dr. Frederick Murtagh.

Dr. Koelle to Head Pharmacology Department.—Dr. George B. Koelle, dean of the University of Pennsylvania Graduate School of Medicine, and chairman of the department of physiology and pharmacology of the Graduate School of Medicine, was elected chairman of the department of pharmacology of the university's School of Medicine, effective July 1. Dr. Koelle will succeed Dr. Carl F. Schmidt, who will retire from his departmental administrative duties after 28 years as professor and chairman. He will continue temporarily to serve

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as dean of the Graduate School of Medicine and will retain responsibility for teaching of pharmacology there while in his new Medical School position.

TENNESSEE

Dr. Rogers Receives Pathology Award.—Dr. Stanfield Rogers, director of Memorial Research Center, University of Tennessee, Knoxville, received the third annual award of the American Society for Experimental Pathology and a $1,000 honorarium contributed by Parke-Davis Co. in "recognition of his basic research on how tumors and cancers behave and grow." Dr. Rogers previously was professor of pathology at Duke University, assuming his present position early last year. He won the award for research done at Duke and the Rockefeller Institute for Medical Research, New York City.

WISCONSIN

Alumni Dinner in Atlantic City.—The University of Wisconsin Medical Alumni dinner will be held June 10, 6 p. m., in the Crystal Dining Room of the Sheraton-Ritz Hotel, Atlantic City. Since the alumni association is in the formative stages, all alumni are urged to attend.

GENERAL

Dr. Bishop Named World Medical Association Officer.—Dr. John M. Bishop, Bellevue, Wash., has been named deputy secretary-general of the World Medical Association. Dr. Bishop will assist Dr. Louis Bauer, World Medical Association secretary-general. Dr. J. Renaud Lemieux, Quebec, Canada, has been elected to fill a casual vacancy as president-elect.

Meeting on Mental Deficiency.—The American Association on Mental Deficiency will hold its 83rd annual meeting at the Hotel Schroeder, Milwaukee, May 19-23, under the presidency of Dr. George Tarjan. A symposium "Status of the A. A. M. D. Project—Past, Present and Future" will be held the morning of May 20. Section meetings will be held under the following titles: administration, education, medicine, social work, psychology, and rehabilitation. A joint education and psychology symposium is planned for the morning of May 22. Tours will be conducted the afternoon of May 21. A joint session with Wisconsin's ninth annual Institute on the Slow Learner is planned. Registration fee is $1 for members and $2 for nonmembers. Exhibits are scheduled.

History of Medicine Meeting in Cleveland.—The 32nd annual meeting of the American Association for the History of Medicine will be held May 21-23 in Cleveland with headquarters at the Cleveland Medical Library. A symposium on the heart will be moderated by Dr. Chauncey D. Leake, President, Ohio Academy of Medical History, May 22. The Garrison Lecture, "A View of Nineteenth Century Medical Historiography in the U. S. A.," will be given by Walton B. McDaniel II, Philadelphia. At the annual dinner, May 22, 7:30 p. m., with Dr. Owsei Temkin, Baltimore, president of the association, presiding. Dr. Saul Jarcho, New York City, will give "Hoaxes in Medical Literature." A round-table discussion commemorating the centenary of Charles Darwin's "Origin of Species" will be moderated by Dr. Bruno Gebhard the morning of May 23. For information, write Dr. John B. Blake, c/o Smithsonian Institution, Washington 25, D. C.

Meeting of Gynecologists.—The American Gynecological Society will hold its 82nd annual session May 21-23 at The Homestead, Hot Springs, Va. The presidential address will be given at noon, May 22, by Dr. Lewis C. Scheffey, Philadelphia. Of the 14 papers scheduled for presentation, the following include invited authors:

Rupture of the Marginal Sinus and Abruption: Some Relationships, Dr. James H. Ferguson and Dr. Robert L. Hatton, Miami, Fla.

Demonstration of Trophoblast in the Circulating Blood During Pregnancy, Dr. Gordon W. Douglas, New York City.

The Relationship of the Squamo-Columnar Junction and the Endocervical Glands to the Site of Origin of Carcinoma of the Cervix, Dr. W. Norman Thornton Jr., Charlottesville, Va.

Radical Vulvectomy with Inguinal, Femoral and Iliac Node Dissection, Dr. Howard Ulfelder, Boston.

The annual dinner will be held the evening of May 22. For information, write Dr. Andrew A. Marchetti, Georgetown Hospital, Washington 7, D. C., Secretary.

Telecast on Hypertension.—A symposium on hypertension will be televised from the Cleveland Clinic on May 27 to 25 closed-circuit locations throughout the country at 9 p. m. EDT that evening. Physicians are invited to be present. The following will participate: Drs. Harriet P. Dustan, Cleveland Clinic; Edward D. Freis, Georgetown University School of Medicine; Irvine H. Page, Cleveland Clinic; Samuel Proger (moderator), Tufts University School of Medicine; Robert W. Wilkins, Boston University School of Medicine. They will consider the problems of several patients who will be presented to them. The problems will illustrate practical aspects of hypertension which the physician is likely to encounter in his day to day practice. This program is sponsored by the CIBA Pharmaceutical Products, Inc., under the title "CIBA TV Clinical Symposia." Cities where the symposium will be televised include: Albany, Atlanta, Baltimore, Boston, Brooklyn, Chicago, Cleveland, Denver, Detroit, Garden City, Kansas City, Los Angeles, Memphis, Miami, Newark, New York, Philadelphia, Pittsburgh, Portland, St. Louis, Salt Lake City, San Francisco, Seattle, Syracuse, and Washington, D. C. For information, write the Medical Radio and Television Institute, 130 E. 59th St., New York 22.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories and possessions in the weeks ended as indicated:

Area	April 18, 1959 Paralytic Type	April 18, 1959 Total Cases	April 19, 1958 Total
New England States			
Maine	..	..	..
New Hampshire	..	..	..
Vermont	..	..	..
Massachusetts	..	..	..
Rhode Island	..	..	..
Connecticut	..	..	..
Middle Atlantic States			
New York	1	2	1
New Jersey	..	..	..
Pennsylvania	..	..	..
East North Central States			
Ohio	..	1	..
Indiana	..	..	..
Illinois	..	..	..
Michigan	..	..	1
Wisconsin	1	1	..
West North Central States			
Minnesota	..	..	..
Iowa	..	..	..
Missouri	..	..	..
North Dakota	..	..	..
South Dakota	..	..	..
Nebraska	..	..	..
Kansas	..	..	..
South Atlantic States			
Delaware	..	..	..
Maryland	..	..	..
District of Columbia	..	..	..
Virginia	..	..	1
West Virginia	..	..	..
North Carolina	1	2	..
South Carolina	..	..	..
Georgia	1	1	..
Florida	6	6	1
East South Central States			
Kentucky	..	..	..
Tennessee	..	..	..
Alabama	..	..	1
Mississippi	..	1	..
West South Central States			
Arkansas	..	..	1
Louisiana	..	..	..
Oklahoma	..	..	..
Texas	2	2	1
Mountain States			
Montana	..	..	..
Idaho	..	..	..
Wyoming	..	..	..
Colorado	..	..	1
New Mexico	..	..	..
Arizona	1	1	..
Utah	..	1	..
Nevada	..	..	..
Pacific States			
Washington	..	..	2
Oregon	..	..	..
California	..	..	2
Alaska	..	..	..
Hawaii	..	..	..
Puerto Rico	..	..	2
Total	13	18	14

Hospital Ship for Overseas Health Aid.—Project HOPE is the principal activity carried out by the People-to-People Health Foundation, Inc., and involves chartering the fully equipped Navy hospital ship, Consolation, and using it as a privately supported, privately operated medical and medical training center in friendly nations overseas. The HOPE Project (HOPE stands for Health Opportunity for People Everywhere) will depend on donations from individuals, corporations, and foundations. The American Medical Association and several drug manufacturers have made contributions in advance of any public request for funds in order to get the project organized. In addition, the drug manufacturers have indicated that they will supply the drug needs of the project. President Eisenhower announced that the Navy will release the ship for charter as soon as financial arrangements for operations are completed. The scheduled sailing date is Sept. 15, from San Francisco. During the first year of operation, the ship will visit countries in Southeast Asia. It will be operated for the foundation by the American President Lines at cost to them and without any fee. The HOPE project will go where it is invited by the medical profession of a country. The Consolation has about 800 beds but will be used primarily for teaching. A permanent party of 20 doctors, including two dentists, and 15 nurses in addition to required technical personnel is planned. The People-to-People Health Foundation, Inc., is a private, independent nonprofit corporation originally sponsored by President Eisenhower. Its program is organized of 41 different

The USS Consolation (Official United States Navy Photograph).

committees of private citizens with the objective of including as many phases of our life and culture as would be meaningful. There are committees in fine arts, sports, and the medical and health professions. The committees have taken action to incorporate to give permanency to their work and tax-deductible status to the gifts they receive. Dr. William B. Walsh is the president of Project HOPE, and the address of the project is P. O. Box 9808, Washington 15, D. C.

CORRECTION

Meeting on Sterility in Atlantic City.—Under this title in Medical News in THE JOURNAL, March 28, page 1494, the item should have stated that Dr. Edward C. Reifenstein Jr., New Brunswick, N. J. (listed as 1959 president), was chairman of the program committee with Dr. Sheldon Payne, Los Angeles, as 1959 president; the presidential address (given as "Nolle Nodere") should have been "Nolle Nocere"; and the Simmons Memorial addressee (given as Dr. Alan N. B. Grant) should read Dr. Alan Grant, Sydney, Australia.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: Various Centers: Parts I and II, June 16-17; Part I only, Sept. 9-10. Examinations must be received at least six weeks in advance of a specific examination date. Examining centers established after close of registration. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES, INC.

Educational Council for Foreign Medical Graduates: Stations around the world, Sept. 22. Final date for filing applications is June 22. Exec. Director, Dr. Dean F. Smiley, 1710 Orrington Ave., Evanston, Ill.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Written.* Montgomery, June 16-18. Sec., Dr. D. G. Gill, State Office Bldg., Montgomery 4.

ALASKA:* On application in Anchorage or Fairbanks. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

ARIZONA:* *Reciprocity.* Phoenix, July 15-17. Exec. Sec., Mr. Robert Carpenter, 826 Security Bldg., Phoenix.

ARKANSAS:* *Examination and Reciprocity.* Little Rock, June 11-12. Sec., Dr. Joe Verser, Harrisburg.

CALIFORNIA: *Written.* San Francisco, June 15-18; Los Angeles, Aug. 17-20; Sacramento, October 19-22. *Oral.* San Francisco, Juune 13; Los Angeles, August 15; San Francisco, November 14. *Oral and Clinical.* San Francisco, June 14; Los Angeles, August 16; San Francisco, Nov. 15. Sec., Dr. Louis E. Jones, Room 536, 1020 N Street, Sacramento.

COLORADO:* *Examination.* Denver, June 9-10. *Reciprocity.* Denver, July 14. Sec., Dr. John B. Farley, 712 Republic Bldg., Denver 2.

CONNECTICUT:* *Homeopathic Board. Reciprocity.* Derby, June 9. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby. *Regular Board. Examination.* Hartford, July 14-16. Sec., Dr. Staley B. Weld, 160 St. Ronan St., New Haven.

DELAWARE: *Examination.* Dover, July 14-16. *Endorsement.* Dover, July 23. Sec., Dr. Joseph S. McDaniel, Professional Bldg., Dover.

DISTRICT OF COLUMBIA:* *Written.* Washington, June 8-9. Final date for filing application is May 1. Sec., Dr. Daniel Leo Finucane, 1740 Massachusetts Ave., N. W., Washington.

FLORIDA:* *Examination.* Miami Beach, June 21-23. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

GEORGIA: *Examination and Reciprocity.* Atlanta, June 10-11. Sec., Mr. C. L. Clifton, 224 State Capitol, Atlanta 3.

GUAM: *Subject to Call.* Act. Sec., Dr. F. L. Conklin, Agana.

HAWAII: *Written.* Honolulu, July 13-14. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: *Examination and Endorsement.* Boise, July 13. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination.* Chicago, July 7-10. *Reciprocity.* Chicago, July 10. Supt. of Registration, Mr. Frederic B. Selcke, Capitol Building, Springfield.

INDIANA: *Examination.* Indianapolis, June 17-19. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

IOWA:* *Examination.* Iowa City, June 15-17. Exec. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines 19.

KANSAS:* *Examination and Endorsement.* Kansas City, June. Sec., Dr. F. J. Nash, New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 8-10. Sec., Dr. Russell E. Teague, 620 South Third St., Louisville 2.

LOUISIANA: *Examination. and Reciprocity.* New Orleans, June 4-6. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans.

MAINE: *Examination and Reciprocity.* Augusta, July 14-16. Sec., Dr. Stephen A. Cobb, Sanford.

MARYLAND: *Examination.* Baltimore, June 10-13. Sec., Dr. Frank K. Morris, 1211 Cathedral St., Baltimore 1.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 8-10. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., West Michigan Ave., Lansing 8.

MISSISSIPPI: *Examination and Reciprocity.* Jackson, June 22-24. Sec., Dr. A. L. Gray, Old Capitol, Jackson 13.

MISSOURI: *Examination.* St. Louis, May 29-30. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

MONTANA: *Examination and Reciprocity.* Helena, Oct. 6. Sec., Dr. Thomas L. Hawkins, 555 Fuller Ave., Helena.

NEBRASKA:* *Examination.* Omaha, June 15-17. Director, Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

NEVADA: *Examination and Reciprocity.* Reno, June 2. Sec., Dr. George H. Ross, 112 North Curry St., Carson City.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Sept. 9-12. Sec., Dr. Edward W. Colby, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 16-18. Sec., Dr. Royal A. Schaaf, 28 West State St., Trenton 8.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, May 18-19. Sec., Dr. R. C. Derbyshire, 227 East Palace Ave., Santa Fe.

NEW YORK: *Examination.* New York, Rochester, Syracuse, Buffalo and Albany, June 23-26. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

NORTH CAROLINA: *Written. Examination and Endorsement.* Raleigh, June 15-18. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination and Reciprocity.* Grand Forks, July 8-11. Sec., Dr. C. J. Glaspel, Box 228, Grafton.

OHIO: *Examination.* Columbus, June 18-20. Sec., Dr. H. M. Platter, 21 West Broad St., Columbus 15.

OKLAHOMA:* *Examination.* Oklahoma City, June 2-3. Exec. Sec., Mrs. E. L. Haidek, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination and Endorsement.* Philadelphia and Pittsburgh, July 1-3. Sec., Mrs. Margaret G. Steiner, Box 911 Harrisburg.

PUERTO RICO: *Examination.* San Juan, Sept. 8. Sec., Dr. Joaquin Mercado Cruz, Box 9156, Santurce.

RHODE ISLAND:* *Examination and Endorsement.* Providence, July 2-3. Administrator, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 23-24. Sec., Dr. H. E. Jervey, Jr., 1829 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Aug. 25-26. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TENNESSEE:* *Examination.* Nashville, June 2-3 and Memphis, June 17-18. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 22-24. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination and Reciprocity.* Salt Lake City, July 8-10. Dir., Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VERMONT: *Examination.* Burlington, June 18-20. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Examination.* Richmond, June 18-20. *Endorsement.* Richmond, June 17. Address: Board of Medical Examiners, 631 First St., S. W., Roanoke.

VIRGIN ISLANDS: *Examination.* Charlotte Amalie, St. Thomas, June 10. Chairman, Dr. Melvin H. Evans, Christiansted, St. Croix.

*Basic Science Certificate required.

DEATHS

Akers, Waller C. ⊛ Stuart, Va.; University College of Medicine, Richmond, 1912; served as president of the Patrick County Medical Society; formerly mayor of the town of Stuart; president of the Patrick County Bank; past-president of the Stuart Rotary Club, of which he was a charter member; served on the medical examiners board during World War I and was awarded a selective service medal for his medical service during World War II; owner of the Stuart Hospital; died Feb. 27, aged 75.

Alford, Warren Grady ⊛ Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1914; served in France during World War I; died in the Kennedy General Hospital March 1, aged 69.

Allen, Charles F., Middleton, Wis.; Milwaukee Medical College, 1900; served two terms as village president; since 1915 president of the Bank of Middleton; died in St. Mary's Hospital, Madison, Feb. 17, aged 85.

Anderson, Joel ⊛ North Platte, Neb.; John A. Creighton Medical College, Omaha, 1915; served as county physician and member of the city council; past-president of the Kiwanis Club; on the staff of the St. Mary and North Platte Memorial hospitals; died Feb. 18, aged 74.

Archambault, Joseph Arthur, Fall River, Mass.; School of Medicine and Surgery of Montreal, Que., Canada, 1901; died in Notre Dame de l'Esperance Hospital, Montreal, Que., Feb. 2, aged 83.

Barrett, Gilbert Michael ⊛ San Francisco; born in Elizabeth, Ill., in 1869; Bellevue Hospital Medical College, New York City, 1895; fellow of the American College of Surgeons; veteran of World War I; in 1918 became chief surgeon for the shipbuilding division of Bethlehem Steel Company and was with them in this capacity until 1954; medical director for the San Francisco District, General Electric Company, for the period from 1917 to 1956; associated with St. Francis Memorial Hospital and the St. Luke's Hospital, where in December, 1956, he was honored and placed on the emeritus staff; died in St. Luke's Hospital Jan. 10, aged 89.

Beckary, Albert M. ⊛ Indian Lake, N. Y.; Cornell University Medical College, New York City, 1905; died Jan. 21, aged 81.

Berry, John William ⊛ Albuquerque, N. M.; University of Colorado School of Medicine, Denver, 1939; veteran of World War II; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Trudeau Society; at one time on the faculty of his alma mater; chief of chest service, Veterans Administration Hospital; associate editor, section on pulmonary diseases, "Cyclopedia of Medicine, Surgery, and the Specialties"; died Feb. 23, aged 44.

Blechman, Abram Joel ⊛ Baltimore; Medical College of Virginia, Richmond, 1926; member of the American Academy of General Practice; associated with the Sinai Hospital; died Nov. 8, aged 58.

Blickenstaff, Augustus J. ⊛ Peoria, Ill.; State College of Physicians and Surgeons, Indianapolis, 1907; member of the American Academy of Ophthalmology and Otolaryngology; on the staff of the Proctor Hospital; died in St. Petersburg, Fla., Feb. 11, aged 86.

Bousfield, Cyril Eustace, Woolwich, Maine; Pennsylvania Medical School (Medical Department of St. John's University) Shanghai, China, 1931; served as a medical missionary in China; died March 1, aged 88.

Bower, Lester Edward ⊛ Chicago; Northwestern University Medical School, Chicago, 1914; clinical assistant professor emeritus of pediatrics at the University of Illinois College of Medicine; specialist certified by the American Board of Pediatrics; past-president of the staffs of the Illinois Masonic and Martha Washington hospitals; served on the staffs of the Cook County and Lutheran Deaconess hospitals; died in the Alexian Brothers Hospital March 3, aged 70.

Bowman, William Frederick, Canton, Mo.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1900; veteran of World War I; died Feb. 8, aged 89.

Boyd, Clarence Elbert ⊛ Lakeland, Fla.; Hospital College of Medicine, Louisville, 1902; veteran of World War I; died in the Morrell Hospital Feb. 2, aged 79.

Boyle, Jeremiah Joseph, Cambridge, Mass.; Harvard Medical School, Boston, 1905; died in the Cambridge City Hospital Feb. 11, aged 81.

Britton, Harry Albert ⊛ Ithaca, N. Y.; Medico-Chirurgical College of Philadelphia, 1913; served on the faculty of Cornell University; died in the Tompkins County Hospital Feb. 17, aged 77.

⊛ Indicates Member of the American Medical Association.

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Brown, Greenberry Bedford ⊗ Georgetown, Ky.; Johns Hopkins University School of Medicine, Baltimore, 1917; veteran of World War I; honorary member of staffs of St. Joseph's and Good Samaritan hospitals in Lexington, and the John Graves Ford Memorial Hospital; died in St. Louis Feb. 18, aged 66.

Brown, Wayne Ebert ⊗ Clyde, Ohio; Western Reserve University School of Medicine, Cleveland, 1932; veteran of World War II; served as county coroner; on the staff of the Bellevue (Ohio) Hospital, where he died Feb. 20, aged 53.

Burgeson, Samuel D. Jr., Los Angeles; College of Medical Evangelists, Loma Linda and Los Angeles, 1929; at one time police and fire department surgeon; on the staff of the Lincoln Hospital; died Feb. 24, aged 58.

Chaimson, Harry, Boston; St. Louis College of Physicians and Surgeons, 1921; died in Milton, Mass., Jan. 4, aged 66.

Clements, William R., Woodbury, N. J.; Medical College of Virginia, Richmond, 1894; died in Trenton Dec. 31, aged 86.

Coffee, Percy Elmos, Davenport, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1903; president and founder of the Elmo Company; died in St. Luke's Hospital Feb. 6, aged 77.

Collins, Thomas F. ⊗ Adamsville, Pa.; Eclectic Medical Institute, Cincinnati, 1904; died in the Meadville (Pa.) City Hospital Feb. 13, aged 80.

Combes, Abbott Carson Jr., Sheffield, Mass.; Columbia University College of Physicians and Surgeons, New York City, 1911; veteran of World War I; served as a member of his local draft board for the duration of World War II, and also as examining physician, New York City; division surgeon for the Long Island Railroad; on the staff of the Flushing (N. Y.) Hospital; at one time president of the Combes' Sanitarium in Corona; died in the Charlotte Hungerford Hospital, Torrington, Conn., Feb. 27, aged 74.

Dickson, George LeGrande, Manning, S. C.; Medical College of South Carolina, Charleston, 1895; also a druggist; died in the Clarendon Memorial Hospital Feb. 19, aged 90.

Dorr, Addison Michael, Wauwatosa, Wis.; Northwestern University Medical School, Chicago, 1912; past-president of the Milwaukee Roentgen Ray Society; served on the staffs of the Veterans Administration Center in Wood, Evangelical Deaconess Hospital in Milwaukee, St. Joseph's Hospital, Beaver Dam, and St. Mary's Hospital in Columbus; died in St. Joseph's Hospital in Milwaukee Feb. 24, aged 72.

Douglas, Edmund Turner ⊗ Hillsboro, Ill.; St. Louis University School of Medicine, 1912; on the staff of Hillsboro Hospital; president of the Montgomery County National Bank; died in St. Luke's Hospital, St. Louis, Feb. 9, aged 69.

Dowd, Thomas Francis ⊗ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1935; past-president of the Philadelphia Academy of General Practice; on the staff of the St. Mary's Hospital, Nazareth, and St. Joseph's hospitals; director of the Pennsylvania Blue Shield; veteran of World War II; team physician for the Philadelphia Eagles of the National Football League; in 1939-1940 team physician for the Chicago Cubs; died Feb. 23, aged 53.

Drummond, Alvin Cash ⊗ New York City; born in Grant, Mich., Feb. 27, 1903; Columbia University College of Physicians and Surgeons, New York City, 1932; specialist certified by the American Board of Urology; certified by the National Board of Medical Examiners; member of the American Urological Association; fellow of the American College of Surgeons, American Academy of Compensation Medicine, International College of Surgeons, and the American Geriatrics Society; member of the New York Academy of Medicine; assistant clinical professor of urology, New York University College of Medicine; associated with University Hospital (New York University–Bellevue Medical Center), Gouverneur Hospital, and Doctors Hospital, where he died Dec. 22, aged 55.

Fenton, Kevin Joseph ⊗ Lieut., U. S. Navy, Akron, Ohio; Western Reserve University School of Medicine, Cleveland, 1956; interned at the Children's Medical Center in Boston; stationed at the U. S. Naval Radiological Defense Laboratory in San Francisco; died in San Francisco Feb. 26, aged 28.

Fibush, Arthur, Oakland, Calif.; Oakland College of Medicine and Surgery, 1916; from 1920 to 1925 health officer of the city of Piedmont; during World War II served as a medical examiner for an induction board; died in the Samuel Merritt Hospital, Feb. 22, aged 68.

Flesche, Bernard Alton ⊗ Lake City, Minn.; born in Walnut Grove, July 17, 1904; University of Minnesota Medical School, Minneapolis, 1934; member of the American Academy of General Practice; past-president and secretary-treasurer of the Wabasha County Medical Society; past-president of the Southeastern Minnesota Academy of General Practice; from 1956 to 1958 member of the executive board of the Minnesota Academy of General Practice and in 1954 received its award for "Top Flight General Practitioner"; member of the Minnesota Public Health Conference, World Health Organization, Association of Military Surgeons of the United States, Minnesota Medical Foundation,

and Phi Rho Sigma fraternity; past-president of Lake City Chamber of Commerce; treasurer of the Wabasha County Historical Society; veteran of World War II; a veteran Boy Scout leader and received the Silver Beaver Award for "long and distinguished service to boyhood" in 1954; died in St. Mary's Hospital, Rochester, Minn., Feb. 12, aged 54.

Floyd, George Matthew ⊗ Hawthorne, Fla.; Atlanta College of Physicians and Surgeons, 1909; died in the Alachua General Hospital, Gainesville, Feb. 17, aged 77.

Fraley, Hugh B., Ashland, Ky.; Louisville (Ky.) Medical College, 1895; died Feb. 20, aged 93.

Friday, Clarence Claude Bausella ⊗ Seguin, Texas; Howard University College of Medicine, Washington, D. C., 1926; served as president twice and as secretary for 23 years for the Southwest Texas District Medical, Dental, and Pharmaceutical Association, which presented him a plaque for "25 years of faithful and distinguished service"; formerly president and executive secretary of the Lone Star State Medical Association; on the staff of the Seguin Hospital; died Dec. 26, aged 62.

Gethner, Max Peter ⊗ Chicago; University of Illinois College of Medicine, Chicago, 1911; specialist certified by the American Board of Internal Medicine; served on the faculty of Rush Medical College; associated with Lutheran Deaconess Home and Hospital, Norwegian American Hospital, Walther Memorial Hospital, and Columbus Hospital; staff physician for the International Ladies Garment Workers Union; on the courtesy staff of Michael Reese Hospital, where he died March 4, aged 71.

Glanville, William Earl, Southampton, N. Y.; Cornell University Medical College, New York City, 1911; served in the U. S. Public Health Service and the U. S. Navy; attending physician for the public schools; for many years on the staff of the Southampton Hospital, where he died Jan. 13, aged 70.

Green, Lafayette, East St. Louis, Ill.; St. Louis College of Physicians and Surgeons, 1910; chief deputy St. Clair County coroner from 1920 to 1928; died in Washington Park Jan. 22, aged 70.

Harris, Claib Bosworth ⊗ Garnett, Kan.; University Medical College of Kansas City, Mo., 1906; served as county health officer, county coroner, and for a time as city health officer in Garnett; associated with the Anderson County Hospital in Garnett and the Trinity Lutheran Hospital in Kansas City, Mo., where he died Feb. 4, aged 82.

Hart, James Finlay, New York City; Syracuse University College of Medicine, 1911; past-president of the Bronx County Medical Society and the New York Diabetes Association; a life member of the New York Academy of Medicine; served as adjunct professor of medicine at the New York Polyclinic Medical School and Hospital and associate clincal professor of medicine at the New York Medical College, Flower and Fifth Avenue Hospitals; associated with the Midtown Hospital; died in the New York Polyclinic Medical School and Hospital Feb. 24, aged 73.

Hopkins, Frank ⊗ Hot Springs, Va.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; died Feb. 28, aged 86.

Hudnall, Harry Gilman ⊗ Roanoke, Va.; University of Virginia Department of Medicine, Charlottesville, 1931; veteran of World War II; associated with the Veterans Administration Hospital; past-president of the Alleghany, Bath Counties Medical Society; died in the Jefferson Hospital Feb. 20, aged 52.

Lemus, Leopoldo, San Antonio, Texas; Escuela Médico Militar, México, D. F., 1923; died in St. Benedict Hospital Feb. 9, aged 60.

Leonard, Edwin Jr., North Bergen, N. J.; Harvard Medical School, Boston, 1898; died in the Christ Hospital, Jersey City, Dec. 11, aged 87.

Llewellyn, John Rees, Salt Lake City, Utah; Rush Medical College, Chicago, 1916; served as a member of the city board of health; during World War II served on the draft appeal board; associated with the Latter Day Saints Hospital; died Feb. 7, aged 72.

Lyman, Alexander Victor, New York City; Columbia University College of Physicians and Surgeons, New York City, 1926; certified by the National Board of Medical Examiners; served overseas during World War I; on the staff of the Roosevelt Hospital; died Feb. 27, aged 62.

McCarthy, Edwin Eugene ⊗ Sarasota, Fla.; Syracuse University College of Medicine, 1937; formerly practiced in Auburn, N. Y., where he was on the staffs of the Mercy and Auburn Memorial hospitals, and the Auburn State Prison; died Feb. 16, aged 47.

McFaddin, James Thomas ⊗ Johnson City, Tenn.; Loyola University School of Medicine, Chicago, 1916; member of the American Society of Anesthesiologists and the American Academy of General Practice; served as city commissioner and city physician and was deputy coroner of Washington County; on the staff of the Memorial Hospital; died Feb. 3, aged 66.

McNary, Wilbert Francis ⊗ East St. Louis, Ill.; Barnes Medical College, St. Louis, 1909; past-president of the St. Clair County Medical Society; veteran of World War I; on the staff of St. Mary's Hospital, where he died Feb. 1, aged 77.

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Mann, Henry L., Holliston, Mass.; Boston University School of Medicine, 1903; served during World War I; assistant medical director for the Equitable Life Assurance Society of America; died in the Framingham (Mass.) Union Hospital Feb. 15, aged 81.

Martinez-Carranza, Enrique, Brownsville, Texas; Loyola University School of Medicine, Chicago, 1917; died in Monterrey, M. L., Mexico, Dec. 4, aged 66.

Mathews, Robert William ⊗ Greensboro, N. C.; Emory University School of Medicine, Atlanta, 1932; associated with the Moses H. Cone Memorial Hospital and the Wesley Long Community Hospital; died Feb. 6, aged 50.

Mead, Chester Ira ⊗ Bakersfield, Calif.; State University of Iowa College of Medicine, Iowa City, 1931; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; past-president of the Kern County Medical Society; on the staff of the Mercy Hospital; past-president of the Bakersfield Rotary Club; died Feb. 11, aged 58.

Middleton, Daniel Spencer ⊗ Rising Fawn, Ga.; Medical Department of Grant University, Chattanooga, Tenn., 1894; physician for the Alabama Great Southern Railway; served in both the Georgia House and Senate; died Feb. 8, aged 88.

Miller, Benjamin ⊗ Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1924; member of the American Academy of General Practice; died Dec. 24, aged 58.

Miller, Nora Rice, Denver; University of Colorado School of Medicine, Denver, 1908; died Feb. 9, aged 90.

Muncie, Henry L. ⊗ Brazil, Ind.; Medical College of Indiana, Indianapolis, 1905; died Feb. 14, aged 79.

Muniz, Rafael Rufino ⊗ New York City; Medical College of Virginia, Richmond, 1932; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; on the staff of the University Hospital; died Dec. 1, aged, 55.

Nattrass, Robert B., Bloomfield, W. Va., New York Homeopathic Medical College and Hospital, New York City, 1905; died Feb. 3, aged 76.

Nelson, Aaron Archer, Allendale, N. J.; University and Bellevue Hospital Medical College, New York City, 1899; veteran of World War I; formerly on the staff of St. Francis Hospital in Jersey City; died in the Valley Hospital, Ridgewood, Feb. 1, aged 80.

Newell, John Oliver, Franklinton, N. C.; College of Physicians and Surgeons, Baltimore, 1910; past-president of the Franklin County Medical Society; died Feb. 18, aged 82.

Nova, Jules Mark ⊗ Freeport, N. Y.; Long Island College Hospital, Brooklyn, 1902; specialist certified by the American Board of Ophthalmology; on the staff of the Brooklyn Eye and Ear Hospital; died in the Nassau Hospital in Mineola Dec. 12, aged 79.

Orlick, Abraham P., Miami Beach, Fla.; Long Island College Hospital, Brooklyn, 1922; formerly practiced in Brooklyn, where he was on the staffs of the Unity, Crown Heights, and Brooklyn Women's hospitals; died in the Miami Heart Institute Feb. 13, aged 70.

Peberdy, Wilfred Montague ⊗ Captain, U. S. Navy, retired, Orange, Conn.; Yale University School of Medicine, New Haven, 1917; entered the U. S. Navy in 1917 and retired Dec. 1, 1946; veteran of World Wars I and II; died in the Veterans Administration Hospital in West Haven Feb. 13, aged 67.

Piggott, John Burr ⊗ Washington, D. C.; University of Maryland School of Medicine, Baltimore, 1907; veteran of World War I; associated with the Eastern Dispensary and Casualty Hospital and the Central Dispensary and Emergency Hospital; at one time on the teaching staff of the George Washington University School of Medicine; died in Florence, S. C., Feb. 10, aged 82.

Rawleigh, George Nelson, Paducah, Ky., St. Louis University School of Medicine, 1924; also a graduate in pharmacy; died in the Western Baptist Hospital Feb. 13, aged 68.

Rice, Ollie Walker ⊗ McAlester, Okla.; Rush Medical College, Chicago, 1897; served as city councilman and school board member; surgeon for the Rock Island Railroad; on the staffs of the McAlester General Hospital and St. Mary's Hospital, where he died Feb. 3, aged 87.

Ross, Samuel Herman ⊗ Waco, Texas; Wayne University College of Medicine, 1935; member of the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology; veteran of World War II; associated with the Veterans Administration Center; died Feb. 13, aged 52.

Rothwell, John Joseph, Flushing, N. Y.; Bellevue Hospital Medical College, New York City, 1893; formerly on the staffs of the New York Foundling and Bellevue hospitals in New York City; died Feb. 15, aged 87.

Scheffel, Alfred Garland ⊗ Beverly Hills, Calif.; Northwestern University Medical School, Chicago,

1937; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons; fellow of the International College of Surgeons and the American College of Surgeons; veteran of World War II; instructor in surgery (orthopedic) at the University of Southern California School of Medicine; on the staffs of the California Babies' and Children's Hospital, Los Angeles County Hospital, and the California Hospital; formerly orthopedic surgeon for the police and fire departments; died in Santa Monica (Calif.) Hospital Feb. 13, aged 45.

Schwer, Carl ⊗ Calhan, Colo.; Kansas City (Mo.) University of Physicians and Surgeons, 1927; recently appointed county physician; died Feb. 16, aged 75.

Shattuck, Martha Isabel Boger ⊗ New Castle, N. H.; Boston University School of Medicine, 1915; veteran of World War I; on the staff of the Portsmouth (N. H.) Hospital; died Feb. 7, aged 66.

Sheaffer, Clinton Paul ⊗ Haddonfield, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1919; died Dec. 7, aged 66.

Shelton, Samuel Wayne ⊗ Tuscaloosa, Ala.; University of Arkansas School of Medicine, Little Rock, 1928; member of the American Psychiatric Association; veteran of World War II; formerly health officer of Winston County; served on the staff of the Hastings (Neb.) State Hospital; on the staff of the Veterans Administration Hospital; died in the University Hospital, Birmingham, Feb. 8, aged 54.

Stewart, Chauncey Calvin ⊗ Youngstown, Ohio; University of Wooster Medical Department, Cleveland, 1907; on the honorary staff of the Youngstown Hospital Association; died in the North Side Unit of the Youngstown Hospital Feb. 15, aged 81.

Stoney, George Franklin ⊗ Erie, Pa.; Jefferson Medical College of Philadelphia, 1910; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; member of The Endocrine Society; fellow of the American College of Physicians; past-president of the Erie County Medical Society; associated with the Erie County Tuberculosis Hospital, Hamot Hospital, and St. Vincent's Hospital; died in the Hamot Hospital Feb. 1, aged 72.

Sullivan, Michael H. ⊗ Newport, R. I.; born in 1877; Harvard Medical School, Boston, 1900; for many years a member of the board of health, of which he served as vice-president and president; past-president of the Rhode Island Medical Society; in 1953 was cited by the society as the "Practitioner of the Year"; lauded by the General Assembly and the city council of his own city; in 1955 the Newport School Committee named its new elementary school after him; Newport Hospital, where he served as chief obstetrician for many years and as chief of the medical staff, dedicated a special bronze plaque to him in 1953, and in the same year he was the recipient of an honorary doctor of science degree from the Rhode Island College of Pharmacy and Allied Sciences; president of the Aquidneck Realty Company and director of the Newport Oil Company; died in the Newport Hospital Feb. 19, aged 81.

Sycamore, Leland Schofield ⊗ Ogden, Utah; University of Tennessee College of Medicine, Memphis, 1943; veteran of World War II; on the staff of St. Benedict Hospital and Dee Hospital, where he died Feb. 17, aged 44.

Tatum, William Edgar ⊗ Gatesville, Texas; Memphis (Tenn.) Hospital Medical College, 1899; died Feb. 3, aged 85.

Thornbury, Richard Henry ⊗ North Collins, N. Y.; University of Michigan Medical School, Ann Arbor, 1924; affiliated with the Bertrand Chaffee Hospital in Springville, and Our Lady of Victory Hospital in Lackawanna; member of the board of directors of the Tri-County Memorial Hospital in Gowanda, where he was on the staff; school physician; died Jan. 7, aged 59.

Vinyard, George Thomas ⊗ Amarillo, Texas; Barnes Medical College, St. Louis, 1894; twice president of the Potter County Medical Society; served as president of the Panhandle District Medical Society; formerly served on the city board of health and as city health officer; fellow of the American College of Surgeons; on the staffs of the Northwest Texas Hospital and St. Anthony's Hospital; died in the Underwood Clinic Hospital Feb. 11, aged 89.

Watson, Wilfred Murray ⊗ Northboro, Mass.; Tufts College Medical School, Boston, 1937; member of the American Academy of General Practice; veteran of World War II; member of the medical staff of the Marlborough Hospital in Marlboro, where he died Feb. 12, aged 46.

Wegmann, Norbert John ⊗ Milwaukee; Marquette University School of Medicine, Milwaukee, 1927; fellow of the American College of Surgeons; member of the Industrial Medical Association; past-president of the Medical Society of Milwaukee County; served on the faculty of his alma mater; associated with Misericordia and Deaconess hospitals; died in Fort Lauderdale, Fla., Feb. 2, aged 58.

Woodward, Clayton E. ⊗ Decatur, Ill.; Northwestern University Medical School, Chicago, 1906; past-president of the Macon County Tuberculosis and Visiting Nurses Association; on the Selective Service Examining boards during World Wars I and II; member and past-president of the staff of Decatur and Macon County Hospital; affiliated with St. Mary's Hospital; died Feb. 13, aged 75.

1959
V. 1

FOREIGN LETTERS

CANADA

Council on Hospital Accreditation.—The program of the newly formed Canadian Council on Hospital Accreditation was formally inaugurated in Toronto in January at a ceremony with the Honorable J. Waldo Monteith, Minister of National Health and Welfare, as principal speaker. Noting that previous accreditation programs had been a joint United States–Canadian effort and that all accreditation in Canada would now be dealt with by Canadians, Mr. Monteith stressed the fact that, although the program's achievements were important, the way in which they were obtained was even more important. The program had not been imposed from above by government or any other authority, and in spite of the introduction of hospital insurance the government had no desire to become involved in accreditation, realizing that this work was best done independently by those furnishing the services designed for improvement.* On the very day on which the accreditation program began the government hospital insurance plan went into effect in a 6th and a 7th of the 10 provinces. The two undertakings were related, in view of the government's stress on improving standards of performance in hospitals. The government does not regard the insurance plan as merely a fiscal project but rather as a service program, and the resources available from government sources should encourage hospitals to meet accreditation standards.

Nutritional Deficiencies in Mental Patients.—It has been asserted that vitamin deficiencies are important contributory factors in certain organic psychoses associated with alcoholism and senility. It has also been suggested that secondary nutritional deficiencies are common in patients with certain psychiatric disorders. There is, however, little factual data on the nature and extent of nutritional deficiencies among mentally ill patients. Gregory and Paul (*Canad. M. A. J.* 80:186, 1959) attempted to compare the incidence of various nutritional deficiencies in certain groups of psychiatric patients at the time of admission to a mental hospital, before being placed on a standard diet. They studied 312 mental hospital patients and compared the results with those in 71 hospital employees. Analyses were made for deficiencies in the vitamin B group, ascorbic acid, vitamin A, carotene, and protein. When the patients were classified in such diagnostic groups as schizophrenia, affective psychoses, organic psychoses of senility, psychoneuroses, and alcoholism no statistically significant variations in the incidence of deficiencies were found. Although lower rates of relative deficiencies in certain vitamins were noted among hospital employees, these findings were related to marked and significant fluctuations in incidences of deficiencies recorded through the progress of the investigation.

Surgical Results of Mitral Valvotomy.—A series of 103 consecutive cases of mitral stenosis were operated on by the same surgeon in Montreal, and 95 of these were followed up by the associated cardiologist who has reviewed the results (*Canad. M. A. J.* 80:168, 1959). Patients were selected for operation according to currently accepted criteria. The follow-up study suggested that the absence of an opening snap or rather a sound heard in diastole in the mitral area, if combined with heavy calcification of the leaflets, was a poor prognostic sign, probably contraindicating operation. As regards mitral regurgitation, increasing importance was attached to the apical systolic murmur, and the correct diagnosis was made in 25 of 29 patients who had mitral stenosis with insufficiency. A positive diagnosis of tricuspid regurgitation may be made if Carvallo's sign is positive, the apical systolic murmur diminishes on treatment, and cardiac catheterization reveals diagnostic pressure curves in the right auricle. The operative risk was small (less than 2%) and could be reduced further if patients were operated on before the late stages of cardiac enlargement, immobile mitral valves, or incompletely controlled heart failure was reached. The results were worth while, even in those with mitral regurgitation, provided there was sufficient stenosis to relieve and the valve leaflets were mobile.

District Care for Mental Patients.—The Health Minister for Ontario reviewed plans for a radically new program in the treatment of mental illness. His plans will make treatment available at the community level, involve segregation of 12,000 hopelessly ill mental patients, and allow for diagnostic and treatment centers in larger cities with a sufficient staff to carry on outpatient day care, night care, and short-term inpatient treatment. The family physician will be able to refer his patients to the local mental health center just as he would to other specialized centers, and commitment papers will no longer be necessary for admission. Mental hospitals will be divided into units of 250 to 300 beds, each with its own staff, and research will be

The items in these letters are contributed by regular correspondents in the various foreign countries.

arranged not only for short-term but also for long-term patients, because the major problem in psychiatry is the cause and cure of schizophrenia and most long-term patients are schizophrenic.

Spinal Traction.—One of the advantages of spinal traction in painful back and neck conditions has allegedly been vertebral separation. Lawson and Godfrey (*M. Services J. Canada* 14:762, 1958) therefore examined radiologically a group of 22 patients before and during cervical or lumbar traction at Sunnybrook Hospital, Toronto. For cervical traction they used an overhead suspension with a head sling, and for lumbar traction they used a Scott traction frame. They found that spinal traction with weights up to 100 lb. on the cervical area or 150 lb. on the lumbar region for varying periods resulted in no significant separation of the vertebrae, although cervical traction resulted in a slight temporary increase in height.

DENMARK

Hypofibrinogenemic Hemorrhage in Pregnancy.—Ejby-Poulsen and Brandt-Nielsen (*Acta obst. et gynec. scandinav.* 37:472-481, 1958) treated five patients who had hypofibrinogenemic hemorrhage by means of fibrinogen infusion. These included three who had premature separation of the placenta, one in whom it occurred during cesarean section where the possibility of intravascular escape of the amniotic fluid was present, and one who had a manual removal of the placenta and in whom plasminogen activator was demonstrated in the blood. The mode of origin in this last patient was thought to be that plasminogen activator from the uterine muscle entered the blood stream after trauma from the uterine muscle at intrauterine operation. All five patients were treated with fibrinogen made from human plasma at the State Serum Institute, Copenhagen, with subsequent rapid reestablishment of the clotting ability of the blood. No severe complications that could reasonably be attributed to fibrinogen infusion were seen.

FINLAND

Tuberculous Laryngitis.—Indirect minor laryngoscopy of 350 tuberculous patients was made at Satakunta Sanatorium by Palva and Huhti (*Acta tuberc. scandinav.* 36:125-132, 1958). Active tuberculous lesions were found in 3.5% and inactive and old fibrotic lesions in 2.5%. Active, long-standing tuberculous laryngitis was associated with far-advanced pulmonary disease of long duration and resistant to treatment. Antituberculous medication in these patients generally removed the pain, whereas the laryngeal changes remained stationary. These resistant infections represented about 25% of the total of the laryngeal lesions, while 75% healed well with streptomycin, PAS, and isoniazid combined. The authors concluded that routine examination of sanatorium patients by the laryngologist was not necessary, but that all patients presenting laryngeal trouble, even in the form of slight hoarseness, should be carefully examined.

17-Hydroxycorticosteroid Levels After Electroshock.—The effect of electroshock and electrostimulation and of emotional factors on the content of free 17-hydroxycorticosteroids in plasma were studied in 12 patients after electroshock therapy, in 5 after electrostimulation, and in 6 controls by Kallio and Tala (*Acta endocrinol.* 30:99-108, 1959). The control level of free 17-hydroxycorticosteroids in the plasma before the electroshock was 19.6 mcg. per 100 ml. The electroshock caused an increase of 9.8 mcg. per 100 ml. in the mean content of free 17-hydroxycorticosteroids in the plasma after 15 minutes. The rise was of short duration. Even after three hours the mean level was lower than before the electroshock. The wide individual variations were thought to be due to the fact that electroshock does not cause maximal stimulation of the adrenal cortex and its metabolic factors. The control level of free 17-hydroxycorticosteroids in the plasma before electrostimulation was 16.9 mcg. per 100 ml. After a slight electrostimulation with no convulsions there was an increase of 5.9 mcg. per 100 ml. in the mean level of free 17-hydroxycorticosteroids in the plasma. In the control subjects no significant changes in the mean content of free hydroxycorticosteroids were observed. The authors concluded that emotional factors had no or little influence on the rise of free 17-hydroxycorticosteroids in the plasma observed after electroshock and electrostimulation and that electroshock and electrostimulation cause a rapid but transient activation of the adrenal cortex.

Psychic Disturbances After Thyroidectomy.—A series of 53 patients who within five years prior to the examination had undergone thyroidectomy were reported on by Henrik Carpelan (*Finska läk.-sällsk. handl.* 101:60-67, 1958). Of the 46 women in the series 16 had preoperatively suffered from exophthalmic goiter or toxic adenoma, whereas 21 were nontoxic and with 9 the diagnosis remained uncertain. Only two of the seven men had been toxic prior to the operation. Eight of the patients were psychotic. Among the formerly toxic patients depressive and neurasthenic features dominated. In the nontoxic patients the main blame was laid to the faulty preoperative diagnosis, but different psychodynamic factors in connection with the operation and the organ involved were contributory. In the toxic patients the psychopathological sequelae were due mainly to psychic factors inherent in the psychogenesis and psychodynamics of thyrotoxicosis. The author stressed the importance of the doctor-

patient relationship for the outcome of the operation on the basis of comparison with 28 patients who postoperatively had not needed psychiatric care.

Gastroscopy.—The roentgenographic and gastroscopic findings were correlated in 71 patients in whom the diagnosis was established at operation or at autopsy by Marcus Sundberg (*Finska läk-sällsk. handl.* 101:38-47, 1958). Of 29 patients with ulcer the x-ray diagnosis was found correct in 72.4% and the gastroscopic diagnosis in 55.2%. Of 28 with carcinoma, the x-ray diagnosis was conclusive in 53.6% and the gastroscopic in 75%. Of five patients with polyposis, the x-ray diagnosis was correct in 60% and the gastroscopic in 80%. In nine additional patients, the operation did not reveal any lesions in the stomach. The gastroscopic diagnosis was correct in all these patients, whereas the x-ray examination was conclusive in only 22.2%. The author commented that gastroscopy was of value as a complementary diagnostic procedure. This value was elucidated by the fact that of 28 patients with carcinoma 4 were detected only by gastroscopy and that in 2 additional patients with carcinoma and 3 with ulcer gastroscopy confirmed an uncertain x-ray diagnosis.

Reticulocyte Reaction in Hypoxia.—Krister Nordström (*Finska läk.-sällsk. handl.* 101:48-59, 1958) reported that 143 volunteers were subjected to hypoxia, the inhaled air containing varying amounts of oxygen. The tests aimed at revealing the sensitivity of the bone marrow to oxygen fluctuations as indicated by the reticulocyte reaction. Lowering of the oxygen saturation of the blood to 82% or less by breathing 13.5, 12, 11, 10, and 9% oxygen resulted in one or more relative reticulocyte counts exceeding the higher of the two control values. Five blood samples were taken within two hours after the test, and the reticulocytes were counted in the same period. The magnitude of increase was 20%. The error of the method in the control series was 12%. Lowering of the oxygen saturation of the blood to 93 and 85% by breathing 18, 16.5, and 15% oxygen and in some instances 13.5 and 11% resulted in a 16% increase in the reticulocyte count of half the subjects. In the others within the same saturation area, decreased values of the same magnitude occurred. This division was not due to the dispersion of the method, as true increases and decreases were recorded. In the phase of increase, the reticulocyte reaction was often associated with a shift to the left, followed by rapid reversion to the normal distribution of cells of the various groups of maturity or by a negative phase combined with a shift to the right. The negative and the positive phases were frequently of equal magnitude. The negative reaction was often combined with a shift to the right. The course of the reticulocyte reaction, as seen from the variation in total figures and as a shift in the distribution of cells in the different groups of maturity, favored the assumption of there being an adjusted accelerated speed of maturation in connection with oxygen deficiency. No definite conclusions were reached by the author as to the effect of hypoxia of short duration on the reaction of the erythrocytes.

FRANCE

Hospital Teaching Reforms.—On Sept. 17, 1956, an interministerial board under the presidency of Prof. R. Debré, president of the National Academy of Medicine, was created to study hospital teaching. This committee ascertained that the number of professors had not increased in proportion to the number of students and that university teaching was too theoretical and was lacking in clinical application. The board proposed to modernize teaching by dividing it into three phases. The first three years of medicine would be dedicated to basic sciences and to elementary clinical work. In the next three years students would spend their entire time in the hospital and university clinics. The third phase would be limited to future researchers. The project proposed to reduce the competition for the externships and to unify hospital and university functions and careers in such a manner that the medical care of patients, teaching, and research would be the responsibility of the same faculty members. Their recruiting would be carried out by national competition among the interns. Faculty positions would be on a full-time basis.

Congress of Allergists.—At the Third Congress of Allergists in Paris, in October, Sidi and co-workers reported that they treated 15 patients who had eczema by placing 20 to 50 mg. of heparin under the tongue daily for one to three months. Of these 11 showed marked improvement.

ICELAND

Leprosy.—Gudmund Benediktsson (*Laeknabladid* 42:71-80, 1958) stated that the incidence of leprosy had decreased in Iceland. In 1901 there were 169 lepers; in 1920 there were 67; in 1940 there were 22; and in 1958 there were 8. A new case was reported in 1957 in a 60-year-old woman. From the ages of 6 to 18 years the patient had lived with her aunt, who suffered from leprosy, but since then she had not been in contact with any person known to be suffering from the disease.

INDIA

Oxytocics in the Third Stage of Labor.—M. D. Adatia (*Journal of the Indian Medical Profession*, vol. 5, December, 1958) studied the comparative merits of methylergonovine and a combination of ergotamine and ergonovine in the management of the third stage of labor. Of 100 consecutive patients, 46 received methylergonovine and 54 received the mixture. These two drugs are now commonly used in the third stage of labor and the former is claimed to possess oxytocic properties superior to those of ergonovine as regards speed and duration of action. Ergonovine combined with ergotamine is supposed to have a more lasting oxytocic effect than ergonovine alone. Thirty patients were given 1 cc. (2 mg.) of methylergonovine intramuscularly and 16 were given the same dose intravenously. The dosage of the mixture was 1 cc. (2.5 mg.) of ergotamine tartrate and 0.125 mg. of ergonovine tartrate. It was given intramuscularly to all except 18, who received it intravenously. The average amount of blood loss after methylergonovine was about half of that lost after the use of the mixture. The oxytocics had a more pronounced action in multiparous women in controlling the blood loss. Methylergonovine also caused a greater reduction in the duration of the third stage of labor. This capacity had no relation to parity.

The fundal height immediately after expulsion of the placenta did not vary significantly in the two series. Thus the action on uterine contraction of the two preparations was about the same. Daily palpation of the fundus to evaluate involution revealed an equally satisfactory involution in the two series. Estimation of blood pressure showed a significant elevation of blood pressure after the administration of the mixture as compared to the other group, where it was hardly affected. No complications such as retention of the placenta were met with in either group. On the whole, methylergonovine was found to be a more efficient oxytocic than the combination of ergonovine and ergotamine, both as regards control of blood loss and duration of the third stage of labor. The absence of serious side-effects and lack of pressor action were further advantages.

Self-sufficiency in Medical Supplies.—India will soon achieve self-sufficiency in the matter of her requirements of drugs and x-ray equipment. The Soviet delegation which toured the country in the first week of October, 1958, investigated the possibility of setting up four plants for the manufacture of certain drugs that have not hitherto been manufactured in India. In 1957, India imported about 27 million dollars worth of drugs from foreign countries in spite of the great progress she had made in the last 10 years in this direction. The Soviet-Indian Commission will finance and work five different projects according to the report they presented to the Ministry of Industries. These are the manufacture of synthetic drugs, alkaloids from Indian medicinal herbs, surgical equipment, antibiotics, and hormones. For these projects, the Soviet Union has offered credit facilities as well as technical assistance.

Planned Parenthood.—In a paper read before the International Conference on Planned Parenthood in New Delhi in February, S. Chandrasekhar described the work carried out by a rural clinic established by the Indian Institute for Population Studies in Madras. The experience gained at this clinic gives cause for hope that a program to limit the expansion of population can succeed in rural India. It shows that by and large the traditional conservative attitude has disappeared and that there is a healthy desire for knowledge. This clinic was established by the institute three years ago. The institute conducted a census in the village and nine adjacent hamlets in January, 1956. It was found that the total number of married women between the ages of 15 and 45 was 673. In course of time the staff of the clinic contacted all those women. Of them, 632 were persuaded to visit the clinic. They were convinced of the need to limit the size of their families either because they could not afford another baby or because their health was poor.

During the period of observation, ranging from 2 to 20 months, 192 of these women conceived because they did not use contraceptives. Though the remaining 440 women have not conceived, the success of the experiment has not been established beyond doubt. The birth rate at the end of five years must be calculated before a conclusion can be reached. The village in question is representative of the country in every sense. An attitude survey showed that 72% of the couples did not want more children; 55% of the husbands and 58% of the wives were in favor of family planning through the use of contraceptives. Discussion with the villagers revealed a profound ignorance of the subject. Under the present socioeconomic and cultural conditions prevailing in Indian villages, the easiest and most effective way to solve the problem seems to be either vasectomy or salpingectomy. Of these two surgical methods of permanent conception control, vasectomy should be given the widest publicity, according to the author.

At the sixth meeting of the Central Family Planning Board in New Delhi in February, the Health Minister said that the day was fast approaching when the government would have to provide family planning facilities on a universal scale at almost every place where medical and public health centers existed. The urgency of the population problem for India was underlined by Sir Julian Huxley

who said that India's failure to solve the problem would mean political and social disaster for the country. India's population, at its present rate of increase, would double itself in the next 45 years. This explosive increase must be checked, if India is to develop economically. From a purely economic point of view, expenditure on population control measures would be one of the most profitable forms of investment for India.

Spinal Arachnoiditis.—A. Singh and co-workers (*Journal of the Association of Physicians of India*, vol. 7, January, 1959) observed several cases of paraplegia of a type which was formerly labeled as "obscure paraplegia" but which was actually spinal arachnoiditis. Thus of 100 patients with paraplegia who were investigated fully, spinal arachnoiditis was detected in 10. In four the diagnosis was confirmed by laminectomy while in the rest it was based on clinical findings and investigations such as myelography. Most of the patients were farmers between 15 and 50 years of age who had been leading an active life. All complained of progressive weakness starting in one lower limb and spreading quickly to the other limb or starting simultaneously in both. Five had root pains. Sphincters were involved in later stages in all but one, starting with hesitancy of micturition and going on to urinary retention with overflow. Six patients gave a definite history of trauma, which was also evident radiologically in five.

The higher cerebral functions and cranial nerves were unaffected while almost all showed the classical signs of spastic paraplegia. Three patients also showed evidence of upper motor neurone lesions in the upper limbs. Five had sensory disturbances. In three the paralysis had reached the stage of paraplegia in flexion and in seven it was still in the stage of paraplegia in extension. Roentgenograms of the spine showed either evidence of old injury in the form of wedging of one vertebra, narrowing of an intervertebral space, or localized osteoarthritis in all but one. Spinal manometry showed the presence of complete block in the subarachnoid space in five. The cerebrospinal fluid showed marked increase in proteins in six. Myelography was performed in nine and showed a complete blocking of the dye in two and a delay in its transit in two others. Laminectomy was performed on four patients. One of these became worse after operation and the other three showed slight improvement but none of them made a complete recovery.

Operations on the Rheumatic Heart.—R. H. Betts and co-workers (*Journal of the Indian Medical Association*, vol. 32, Jan. 16, 1959) stated that rheumatic heart disease is almost as common in India as in the Western countries. They have not operated for aortic stenosis but four patients with aortic regurgitation were operated on and Hufnagel valves inserted in the descending aorta. All four patients were improved after operation and the improvement has been maintained. The authors believed that operation on the mitral valve for any reason but the relief of symptoms is not justified. They strongly recommend that all patients suffering from rheumatic heart disease be referred to a cardiologist for assessment of the possibility of surgical relief as soon as symptoms develop, instead of being offered a long course of medical therapy. The best results from mitral valvulotomy were obtained in patients with pure mitral stenosis.

Operative treatment should be offered at any stage of the disease provided mitral stenosis is the predominant lesion and the patient can withstand the operation. The ages of the patients in the authors' series varied from 9 to 40 years. Patients under 20 with symptoms are commonly seen in India. Operation should be avoided in the presence of clinically demonstrable rheumatic activity as long as improvement continues. The presence of slight to moderate mitral regurgitation does not necessarily mean that a good result will not be obtained, although it is less certain in such patients. Auscultation alone is unreliable in evaluating the patients with prominent apical systolic murmurs. The presence of an apical systolic murmur, even though loud, in a patient with mitral stenosis does not always mean that the patient will not be benefited by a valvulotomy. If the associated diastolic murmur is not definite, the lesion is usually purely regurgitative.

Cardiac catheterization helps in recognizing significant degrees of mitral insufficiency. Forty patients were subjected to cardiac catheterization. Several of them who had loud systolic murmurs but no evidence of regurgitation were benefited by operation. The presence of auricular fibrillation is not a contraindication to operation. Such patients do well if the ventricular rate is controlled by digitalis. Some patients with a cardiothoracic ratio of 60 to 70% have had excellent functional postoperative results. Moderate cardiac enlargement does not preclude surgical treatment. A series of 123 patients with mitral stenosis were operated on. Most of them were improved after operation; 18 died.

Pulmonary Amebiasis.—G. Victor (*Antiseptic*, vol. 55, December, 1958) reported a series of 15 patients with pulmonary amebiasis, the youngest being 16 years old and the oldest 62. Cough with expectoration and pain over the right lower portion of the chest were the common presenting symptoms, others being fever, abdominal pain, nausea, anorexia, dyspnea, and swelling in the abdomen and right side of chest. One patient raised blood-stained sputum. Only four patients gave a history of dysentery, the minimum interval between the occurrence of intestinal amebiasis and onset of pulmonary symp-

toms being 1 month and the maximum 12 months. Clinically, there was dulness to percussion over the base of the right lung, diminished respiratory movements, and presence of rales and rhonchi in most patients. The liver was palpable and tender in 13. The total leukocyte count varied between 5,200 and 16,800, the polymorphonuclear cells being predominant in 10 patients while the lymphocytes were increased in 5. One patient had an eosinophilia of 22%.

The sedimentation rate ranged between 5 and 120 mm. Stools contained cysts of Entameba histolytica in two patients only, two others showing Ancylostoma and whipworm ova. Only one patient had chocolate colored sputum containing trophic forms of E. histolytica, two others showed staphylococci and streptococci, and two others showed only pus cells. Sigmoidoscopic examination revealed a granular mucosa, with mucus and blood, in only one patient. Radiologically all the patients showed involvement of the right side of the chest. Treatment consisted of such drugs as emetine, diiodohydroxyquin, and chiniofon enemas. Both clinical and radiologic response was observed with medical treatment in all but one patient and he left the hospital against medical advice.

Peculiar Jaundice.—The recent outbreak of jaundice in Malda, West Bengal, was found to be viral in origin. Two physicians from the Calcutta School of Tropical Medicine, after studying the disease on the spot, brought specimens of blood and stools of some of the persons attacked for examination. The virus was suspected to have been carried from Nepal by a group of laborers. The disease started spreading within a short time and attacked about 90 persons in one village. It did not, however, spread to other villages and there were no deaths. Unlike the common type of infectious jaundice, this variety was very infectious and very acute.

Brucellosis in Children.—T. N. Mathur stated that brucellosis in children is not so rare as is usually supposed. In addition to the 11 cases reported earlier, he has reported another 13 cases in the *Indian Journal of Child Health* (vol. 8, January, 1959). These patients were first given a diagnosis of chronic tonsillitis, typhoid, malaria, amebic hepatitis, secondary syphilis, pulmonary tuberculosis, tuberculosis of the hip, and sciatica. Typhoid was the most common erroneous diagnosis and, as chloramphenicol brings about cure of both diseases, often no further investigations were made. Only 6 of the 13 patients complained of pain in the joints. Joint pains are thus not an important feature of the disease in children. All the patients but two showed a significant titer of agglutination for Brucella antigen. Two showed blood cultures positive for Brucella melitensis. Of the 13 patients, 2 came from rural areas, 3 had contact with cattle, 2 had drunk unboiled milk, and 4 denied having done so. Brucellosis should be looked for in all children with unexplained fever, even if there is no definite history of contact with cattle, sheep, or goats.

Chloramphenicol Therapy in Children.—P. N. Taneja and co-workers (*Indian Journal of Child Health*, vol. 8, January, 1959) described the toxic effects of chloramphenicol noted during short-term therapy with this drug in children. A series of 748 children suffering from different diseases were treated with chloramphenicol. Total and differential leukocyte counts were made twice a week or more often if necessary. Of the total number 91, or 12%, developed complications due to the drug. These included hematological complications (granulocytopenia, pancytopenia) in 31, stomatitis in 35, diarrhea in 20, vomiting in 3, and allergic rash in 2. The average dose of the antibiotic used in this series was 50 mg. per kilogram of body weight per day. The duration of treatment varied from less than a week to three weeks.

Most of the complications developed in the first two weeks of treatment. Thus granulocytopenia was noted in 27, more often by routine blood examination than by clinical manifestations. Of the 27 patients 23 showed no clinical manifestations. Granulocytopenia appeared at the earliest on the 3rd day and the maximum interval was 10 days. Four patients developed this complication while still receiving cortisone or ACTH along with the antibiotic. Some patients reacted promptly to withdrawal of chloramphenicol but others had not recovered when last seen. Pancytopenia occurred in one 7-month-old child who had received the drug for seven days. He was brought to hospital for a sudden pallor of one day's duration and was afebrile at the time. He recovered with blood transfusion and penicillin therapy. A fall in hemoglobin level occurred in one patient on the fifth day of treatment. Methemoglobinemia was noted in one patient who was also receiving cortisone. Stomatitis, varying in intensity from mild to severe, occurred in 35 patients, in 2 of whom the drug had to be withdrawn because of the severity of this complication. This complication occurred after varying periods of treatment, the shortest being 1 and the longest 12 days.

Twenty patients who developed diarrhea showed a marked improvement on changing over to parenteral therapy. Parenteral therapy was also resorted to with favorable results in the three who developed vomiting. The allergic rash disappeared in one patient on withdrawal of chloramphenicol and administration of antihistaminics while the other patient with this complication died of aspiration pneumonia. The age of these patients varied from less than 1 year to 12 years and the largest percent-

age of complications occurred in those between 3 and 6 years old. Cortisone and ACTH did not prevent the occurrence of hematological complications. The incidence and severity of complications were independent of the dosage used, marked granulocytopenia having been noted even when only 25 mg. per kilogram of body weight per day was given. The degree of depression in the leukocyte count had no prognostic value as regards the speed of recovery, although the earlier the complication was detected the better the prognosis.

Patients showed variable response to withdrawal of the drug. Those with granulocytopenia or pancytopenia without any clinical manifestations had a better prognosis than those with manifest complications. Of the 5 who had clinical manifestations of hematological complications, 3 died in the hospital and 1 left in a poor condition, but the 26 with nonmanifest hematological complications all survived. All those with stomatitis were already receiving multivitamin and vitamin B complex preparations. Thus probably some other factors were responsible for this complication. Vomiting and diarrhea were possibly due to the local irritating effect on the mucosa and patients with these conditions responded on changing the route of administration to parenteral.

Encephalitis.—Patel and Tandon (*Current Medical Practice*, vol. 3, January, 1959) treated 11 patients who had encephalitis. Besides symptomatic treatment and maintenance of fluid and electrolyte balance, these patients were given tetracyclines and steroids. The antibiotics were given parenterally at first and later orally as the general condition improved. In severe cases the drug was given in a dosage of 100 to 250 mg. by slow intravenous infusion every eight hours, and in mild cases 100 mg. was given every eight hours till the fever came down. This was continued for three or four days after the temperature reached normal and remained so. The steroids used were ACTH, corticotropin gel, and prednisolone. A slow intravenous infusion of 25 units of ACTH per day spread over six to eight hours was given. The gel was given in a dose of 40 units per day intramuscularly, and the dose of prednisolone was 10 mg. every eight hours, the dose being gradually reduced as the condition improved.

The slow intravenous infusion of ACTH was the treatment of choice as it gave a prolonged action with a minimal amount of the drug. Seven of the 11 patients recovered. In five of these fever came down within 48 hours of starting therapy with the antibiotics and steroids. Headache persisted in most patients for about a month after the fever came down. The spinal fluid sugar level came down to normal with clinical recovery while the cells and proteins also showed a fall. The average stay in hospital was 10 to 15 days. Sequelae were noticed in only one patient in the form of a slight mental imbalance. On the whole the results were encouraging with the combined use of broad-spectrum antibiotics and steroids.

ISRAEL

Uptake of Radioiodine by the Infarcted Heart.—At a meeting of the Israel Medical Association in Jerusalem, F. Dreyfuss and co-workers reported on the results obtained when radioiodine (I^{131}) was given to four patients with a recent anterior wall myocardial infarction, six with posterior wall infarction, and nine controls. They were given 100 to 200 μc of carrier-free I^{131} by mouth. The patients with infarction were usually examined within three weeks after coronary occlusion. Readings were made by exploring the precordium with a scintillation counter. Readings were taken at 30-minute intervals for the first six hours, followed by daily readings for one to three weeks.

A definite difference was found in the counts in patients with myocardial infarcts and the controls. In the first six hours after the administration of I^{131} absolute counts of 10,000 to 40,000 per minute were obtained over the precordium in all patients. One day later counts of 1,600 to 4,500 were observed in the controls, but the counts in the patients with infarcts on the corresponding day were higher and ranged between 6,350 and 9,000 for anterior wall infarcts and between 3,000 and 5,500 for posterior wall infarcts. They continued to be higher in the patient group 48 hours and six or seven days, respectively, after the ingestion of I^{131}. For the first few hours higher readings were obtained over the heart than over the right side of the chest in all subjects. This phenomenon was explained by the initially high level of circulating I^{131} before it was cleared by the thyroid, kidneys, and liver. The difference observed after 24 to 48 hours and six to seven days must be caused by a significant uptake of I^{131} by the infarcted heart.

One of the patients with posterior wall infarction died seven days after the administration of I^{131} as a consequence of his severe cardiac lesion. At autopsy on the following day two infarcted areas were found. In both of these areas the concentration of I^{131} was about 50% higher than in the intact heart muscle. Tissue samples taken from the intact areas were tested for radioactivity. The homogenized material from the infarcted areas had concentrations of I^{131} 50 and 70% higher, respectively, than the intact myocardium. Necrotic heart muscle apparently takes up more I^{131} than heart muscle not so affected.

NORWAY

Dissecting Aneurysm.—In a series of about 700 cerebral angiographies by means of the usual percutaneous technique, three deaths were reported by Kjell Liverud (*J. Oslo City Hosp.* 8:209-241 [Nov.-Dec.] 1958). In these three cases an obliterating dissecting aneurysm developed on the injection of the contrast medium at the site of puncture of the common carotid artery. Death was attributed to obliteration of the carotid artery. The investigations were made by three investigators, which makes it unlikely that it was due to an individual mistake in technique. The accident was caused by the sharp tip of the needle in the vessel wall during injection. In order to prevent further accidents of this kind the author considered it essential to alter the technique and the sharp needle in the vessel was replaced by a flexible polyethylene catheter introduced percutaneously.

This procedure has the advantages of safe intraluminal injection; freer choice of projections; choice of internal, external, or common carotid angiography in the same investigation; easier diagnosis of carotid thrombosis; and better bilateral filling of the cerebral vessels during contralateral carotid compression. The patient is in a comfortable position between injections which may be made at longer intervals to reduce the action of the contrast medium on the cerebral vessels. The investigation may be performed by one man and take place in a quiet atmosphere as a routine procedure. By lengthening the catheter the exposure of the investigator to x-rays can be reduced. In rapid serial angiography the catheter may be connected with an automatic pressure syringe, and it is then not necessary for the investigator to stay in the radiography room for the numerous exposures. The procedure has been used as routine in about 1,000 cases without fatal complications.

Pyrazinoic Acid Amide and Cycloserine for Tuberculosis.—Birkeland and Nissen-Meyer (*Acta tuberc. scandinav.* 34:98-109, 1958) sudied a series of 30 patients with far advanced pulmonary tuberculosis and bacillary resistance to at least two of the principal antituberculous drugs; 13 were selected at random for treatment with pyrazinoic acid amide and 17 received this drug plus a small dose of cycloserine. The bacteriological and radiologic results of three months' treatment were on the whole modest in both groups; complete disappearance of cavities was not seen in any patients and sputum conversion in only a few. In the evaluation of these results, the type of case must, however, be considered. All patients had widespread cavitary disease of long duration and with extensive fibrotic changes. This type of patient generally responds poorly to medical treatment, and even without drug-resistant tubercle bacilli outstanding results could not have been expected from the best combination of our three principal drugs.

The results obtained with pyrazinoic acid amide and with this drug combined with cycloserine could not be compared with certainty because of the small number of patients in each group. The bacteriological and radiologic findings, however, suggested that pyrazinoic acid amide plus a small dose of cycloserine was more effective than pyrazinoic acid amide alone. The toxic effects of the drugs observed in the present series were all reversible. They were, however, so severe and unpleasant that the use of these drugs should be reserved for patients who cannot be treated with a combination of the principal drugs, either because of intolerance or because of bacillary resistance. If one of the principal drugs cannot be used, it should be tried in combination with one of the new drugs. Controlled trials have already shown that the effect of pyrazinoic acid amide combined with either streptomycin or isoniazid was comparable to any combination of the three principal drugs.

In patients in whom none of the principal drugs can be used successfully, treatment with pyrazinoic acid amide plus a small dose of cycloserine may be worth a trial, particularly if a successful medical treatment can make the patient fit for additional surgical treatment. Unfortunately, most patients with bacillary resistance to the principal drugs, like most of those in the present series, have processes which respond poorly to chemotherapy and a respiratory function which excludes surgical treatment. In such patients, the advantage of a moderate and perhaps temporary effect of the drugs must be weighed against the risk of possible toxic complications. A definite indication for pyrazinoic acid amide plus cycloserine will, however, be present in patients in whom surgical treatment of an old cavity in one lung is contraindicated by an acute spread to the other lung, which, because of drug-resistant tubercle bacilli, cannot be expected to respond to treatment with the principal antituberculous drugs.

PORTUGAL

Physiotherapy of Periarthritis.—Albano Ramos (*O Medico*, no. 365, 1958) stated that calcified periarthritis of the shoulder has an obscure etiology. Among the various causes suggested the most likely is direct or indirect trauma. A similar lesion appears rarely in the hip, elbow, or knee. The fibrous form of periarthritis lends itself to erroneous interpretation, as the roentgenogram does not define the diagnosis. This is not true of calcified periarthritis. Treatment includes drugs for the pain and muscular rigidity, adrenocortical hormones, surgical ablation of the calcarious deposits, physiotherapy (mobili-

zation, galvanization, faradization, diathermy, and ultrasound). The author concentrated on radiotherapy. With this method he observed almost 85% of cures with an almost constant regression of calcification. The best means to fight this disease is, however, to prevent it. Immediately after an articular trauma the region should be irradiated, even through the plaster cast, for the earlier the radiation the greater the chances of nonformation of calcareous deposits. Their accumulation, forming large calcifications, reduces or delays the patient's chances of cure.

Spinal Amyotrophy.—Diogo Furtado (*Arquivo de Patologia* 30:522-532, 1958) stated that the fatal prognosis in patients with hereditary muscular atrophy, which was part of the classical conception of this disease, is being contested by several observers. The author observed a typical case of this disease, with biopsy and electromyographic confirmation of the diagnosis, which started when the patient was 2 years of age, progressed until he was 14, and then underwent remission. The prognosis is not therefore so grave as it was originally thought to be.

Cryptorchism.—M. Fernandez e Fernandes (*Gazeta Medica Portuguesa*, vol. 11, no. 3, 1958) reserved the term cryptorchism for irreducible or permanent absence of a testis within the scrotum, due to its detention in the physiological tract from the abdominal wall to the scrotum. Examination for cryptorchism should be performed repeatedly and with the patient in various positions. In cryptorchism the testis is never of normal size. The presence of the cremasteric reflex in a doubtful case indicates a probable pseudocryptorchism. Surgical correction should not be attempted before the age of 9 years, because a spontaneous descent of the testis may occur. This limit should, however, not be rigid since the psychosexual development should be considered more than the chronological age.

Hormonal therapy is indicated in all patients with cryptorchism without complications, in those with pseudocryptorchism in whom the definite fixation of the testis has not been established before the 10th year, and also in association with surgical cases, before and after orchiopexy. A dose of 300 to 500 units of chorionic gonadotropin may be given two or three times a week, not exceeding a total of 8,000 units. With very large doses there is danger of provoking the degeneration of the gonad. Testicular therapy, which may also cause precocious virilization, should be reserved for patients with pronounced sexual infantilism, with maximum doses of 10 mg. a day for two or three weeks, always combined with gonadotropins. In patients with hypothyroidism or adiposogenital dystrophy the use of thyroid extract is beneficial. Operation is indicated in patients with complicated cryptorchism, ectopic testis, persistence of the peritoneovaginal canal, concomitant hernia, accidents of torsion, inflammatory or carcinogenic processes, and in those in whom, after the age of 11 or 12 years, the hormonal treatment has produced no effect.

Iron and Cobalt in the Treatment of Anemia.—Soares and Moreau (*Gazeta Medica Portuguesa* 11:58 [May-Jun.] 1958) stated that the intravenous use of cobalt chloride in patients with anemia had to be discontinued because of severe reactions even with doses too small to have an appreciable hematopoietic effect. On the other hand the use of a combination of iron and cobalt gave good results in patients with thalassemia, achylic chloroanemia, gastric anemia of Morawitz, acquired hemolytic idiopathic anemia, symptomatic anemia of acute rheumatism, and myeloid leukosis. The drug was well tolerated; no symptoms of thyroid hypofunction were observed, nor was there an increase of the size of the thyroid.

Aplastic Anemia.—Francisco Branco (*Arquivo de Patologia* 30:489-521, 1958) reported that damage to the marrow may be caused by benzene, trinitrotoluene, carbon tetrachloride, trichlorethylene (used in industry), lindane (an insecticide), paraphenylenediamine (used in hair dying), and thorium dioxide (a contrast medium). Drugs cited as possible causes of aplastic anemia include the organic arsenicals, gold salts, nitrogen mustards, alkaloids of colchicum, bismuth, mercury, and such antimetabolites as aminopterin and mercaptopurine. Thiouracil and other synthetic antithyroid drugs and such anticonvulsants as hydantoin and its derivatives, in spite of being regarded as responsible for refractory total medullary aplasias, are more likely to produce agranulocytosis.

Aminopyrine and quinacrine, especially when used continuously, have also been implicated. Some substances act merely as sensitizing agents in patients suffering from lability of the hematopoietic system, and this may explain why only a few of those exposed suffer from aplastic anemia. Such infections as miliary tuberculosis, leptospiral jaundice, syphilis, typhoid, brucellosis, malaria, and rheumatic fever may cause aplastic anemia. Excessive doses of streptomycin and, more frequently, chloramphenicol may also cause anemia. The poisoning effect of the latter may depend on the nitrobenzenic radical in its constitution.

SWEDEN

Combined Treatment of Tuberculosis.—Two new combinations of tuberculostatics—cycloserine-isoniazid and cycloserine-viomycin—were tried in the treatment of pulmonary tuberculosis and compared with the combination of PAS and isoniazid by I. Ståhle (*Acta tuberc. scandinav.* 34:83-97, 1958).

Cycloserine and isoniazid were given to 28, cycloserine and viomycin to 30, and PAS and isoniazid to 34 patients. The duration of treatment was three months. The tuberculostatic effect evaluated clinically and roentgenologically was fully comparable for all combinations and was somewhat better for therapy that included cycloserine. With cycloserine and viomycin, healing of cavities was remarkably good. It was not possible to study any development of resistance for in all patients the tubercle bacilli rapidly disappeared from the sputum. One patient showed initial resistance to cycloserine before treatment. The tolerance to both cycloserine and viomycin was excellent and no side-effects attributable to those agents were observed. Symptoms of intolerance to PAS and isoniazid occurred in a few patients however. Cycloserine and viomycin combined appeared to be of great value in the treatment of pulmonary tuberculosis.

Calcium Infusion Test for Sarcoidosis.—An intravenous calcium infusion was administered to 14 patients with sarcoidosis by Björn-Erik Roos (*Acta tuberc. scandinav.* 34:152-172, 1958). Nine of the patients were subsequently treated with corticosteroids and/or ACTH and three were treated with vitamin D. The patients were examined at intervals during and after the treatment. Earlier investigators showed that the urine phosphorus excretion in normal persons decreased during the intravenous administration of calcium. Only 2 of the 14 patients reacted in this manner. The others deviated in varying degree from the normal. During treatment both with corticosteroids and ACTH and with vitamin D, 11 of 12 patients so treated reacted normally to the administration of calcium intravenously. After the treatment, on the other hand, the reaction of all patients again deviated from the normal. If the 14 patients were regarded as a group, their reaction to the intravenous calcium infusion most closely resembled that observed earlier by other investigators in hyperparathyroidism. It appeared that patients with sarcoidosis might have an impaired calcium metabolism even when they do not have hypercalcemia.

Prolapse of the Uterus.—Sven Svennerud (*Acta obst. et gynec. scandinav.* 37:416-433, 1958) analyzed a series of 539 operations for prolapse of the uterus. The mortality was 1.3% and the frequency of recurrence 7.3%. In that part of the series in which the patients had the complete Manchester-repair, the frequency of recurrence was 4.6% as against 17.2% when either amputation of the cervix or colporraphy was omitted. Of 161 patients operated on before the menopause, the symptoms had appeared within one year of delivery in more than 50%, and of 388 patients operated on after the menopause the symptoms had appeared after the menopause in about 65%. Of the total number, 23% had undergone earlier complicated deliveries. Early ambulation after operation diminished the frequency of venous thrombosis from 6.5 to 3.1% and fatal pulmonary embolism decreased from five cases to none. In the group that was allowed to get up soon after the operation (163), the mortality was 0.6% compared with 1.6% of the 376 patients who rested in bed for 14 days after the operation.

The frequency of urinary tract infection also diminished, as did the length of stay in hospital after the operation (30%) with early ambulation. Administration of estrogens before and after operation promoted primary healing. Healing by second intention occurred three times as often among those who had not received estrogens. Estrogen treatment produced some ascent of the uterus and thereby made the operation more difficult. It was therefore possible that in such patients the operation might not be sufficiently radical and the risk of recurrence might thereby be increased. Of the 539 patients operated on, 1 developed carcinoma of the uterus, 3 developed ovarian carcinoma, 4 mammary carcinoma, and 14 carcinoma of the colon, stomach, or liver. Twenty-five pregnancies occurred in 15 women after the operation and the frequency of abortion was 40%. Cesarean section was not necessary and delivery was in no case complicated. The risk of recurrences after vaginal delivery was relatively small. The author concluded that the Manchester operation should always include amputation of the cervix except in young women who wish to have children later. Delivery after operation can be performed by the vaginal route. Any injury to the levator ani should be sutured at the time of delivery.

Blood Loss at Delivery.—In 18 obstetrically normal women the total amount of hemoglobin in the body (THb), the hemoglobin concentration (Hb), and the hematocrit (Hct) were measured repeatedly in peripheral blood before and after delivery by Robbe and Ström (*Acta obst. et gynec. scandinav.* 37:448-471, 1958). The maternal external blood loss at and after delivery was carefully estimated. Repeated THb measurements were made after delivery in an additional nine normal women. Measurements of the plasma volume were made before and after delivery in 9 of the 27 women. The maternal THb before delivery was slightly overestimated (by 1 to 2%), when the alveolar carbon dioxide method was used because of fetal uptake of carbon dioxide. This error was corrected.

Maternal blood loss in the placenta was estimated as 20% of the placental weight. The total maternal external blood loss at delivery and during the first week after delivery averaged 547 ml. of whole blood (202 ml. of red blood cells). At delivery and during the first two hours after delivery, 84% of the total external loss occurred. The decrease of THb up to the seventh postpartum day correspond-

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ed to a loss of 961 ml. of whole blood (355 ml. of red blood cells). The unexplained difference, 414 ml. of whole blood (153 ml. of red blood cells), was statistically highly significant. The unexplained disappearance of erythrocytes mainly occurred between a few hours before delivery and two hours after delivery. The magnitude of the unexplained difference was not correlated to the amount of the external blood loss. The plasma volume determinations were not judged to be reliable during labor. After delivery the body Hct averaged 90% of the peripheral Hct.

Prolonged Pregnancy.—L. Lindgren and co-workers (*Act obst. et gynec. scandinav.* 37:482-496, 1958) stated that they treated prolonged pregnancies conservatively. A higher proportion of male and first-born infants belonged to the group of prolonged pregnancy as compared to the group of delivery at term. The perinatal death rate for prolonged pregnancy was twice that for delivery at term. Prior to labor there was no difference between the fetal mortality rates for prolonged pregnancy and delivery at term. Asphyxia and cerebral hemorrhage accounted for the increase in the perinatal death rates during and after labor. It was found that a high birth weight did not involve the risk of increasing the fetal death rate or danger of asphyxia and cerebral hemorrhage, provided that the patients in whom cephalopelvic disproportion was diagnosed clinically were delivered by cesarean section. The incidence of forceps delivery and the proportion of fetal deaths associated with it were higher in cases of prolonged pregnancy. The rise in the perinatal death rate for prolonged pregnancy was above all observed in cases of primary uterine inertia and threatened asphyxia: the higher death rates were due (1) to the higher incidence of and higher fetal death rate for primary uterine inertia, and (2) to the higher incidence of and high fetal death rate for threatened asphyxia.

The Prediabetic Period and Obstetrics.—Lars Hagbard (*Acta obst. et gynec. scandinav.* 37:497-518, 1958) analyzed 274 pregnancies in 113 women who subsequently developed diabetes. In all these women the disease developed during their childbearing years and in most before the age of 40. No increase in the incidence of abortion was observed in these prediabetic pregnancies. There was an unusually large proportion of oversized babies (birth weight over 4,500 Gm. or 10 lb.) in that series, particularly during the last two years prior to the diagnosis of the maternal diabetes, i. e., 26.7% compared with 1 or 2% (the normal percentage). The perinatal mortality was much higher during the five years preceding diagnosis. In the two years before diagnosis 37.3% of the babies were lost perinatally. Spontaneous premature labor (before the end of the 37th week) occurred in 17.4% and in the last two years before the diagnosis 26.2% were born before the end of the 37th week. A significant proportion of the children of these prediabetic mothers showed a congenital deformity, i. e., 4% compared with 1.7% in a normal control series.

As it was believed that these complications might have been due to a disorder of the maternal carbohydrate metabolism during the prediabetic period, it was decided to make glucose tolerance tests on all women giving birth to children weighing over 4,500 Gm. These tests were also made on a number of women with an obstetric history of severely deformed or stillborn infants and in whom no obstetric or other cause of the complication was found. Altogether 189 women were examined on the fourth or seventh day after delivery. A control series of 100 women was identically examined. It was found that the average value for the blood sugar both 60 and 90 minutes after administration of glucose was significantly higher in the test series than in the control series. Using a maximum value of 220 mg. per milliliter and/or a two-hour value of 120 mg. per milliliter as criteria of abnormality, 37 or 19.6% of the test series proved to have abnormal glucose tolerance curves compared with 4 or 4% of the control series.

The high incidence of fetal complications during the prediabetic period was probably due to the fact that some of the mothers had transient unrecognized diabetes during pregnancy or at any rate had a lowered carbohydrate tolerance several years before the disease was manifest. The author believed it was not correct to use the terms prediabetic pregnancy and prediabetic state in the sense they had hitherto been used.

UNITED KINGDOM

Little Danger in Trumpeters' Loud Notes.—Prof. M. Faulkner, a professional player and teacher of the trumpet, and Prof. E. P. Sharpey-Schafer, a physician, reported in the *British Medical Journal* of March 14 on their investigations into the dizziness and occasional blackouts suffered by trumpeters when they play high, loud notes. They concluded that the musicians are not likely to come to any harm. Measurements were made as Professor Faulkner blew his hardest and loudest. Measurements were made on two other subjects, a surgeon who played the trumpet as a hobby and a novice purported to be learning the oboe. Because of the dizziness hazard many leading orchestras carry an assistant to take over from the first trumpeter in prolonged difficult passages. Wagner is said to be the composer with least consideration for the feelings of the trumpet player. A long phrase from Wagner's "Tannhäuser" was played by Professor Faulkner without drawing breath. Then he blew a loud arpeggio up to high D. On the top note he

reached a pressure more than three times as great as that normally used by doctors to test circulation.

The circulatory effects of trumpet playing were similar to a forced expiratory effort with nose and mouth closed. It raised the chest pressure and checked the flow of blood in the great veins. Trumpet playing produced high chest pressures compared with other instruments, but it did not approach pressure levels induced by coughing. For orchestras with small working capital it might be possible to dispense with the assistant trumpeter if the first trumpeter wore a pilot's pressure suit, which could be surreptitiously inflated by a switch on the conductor's desk.

Reactions of Patients Told They Have Cancer.—Easson and Aitken-Swan (*British Medical Journal*, March 21, 1959) collated information from consultants who informed 231 selected patients (93 men and 138 women) that they had cancer and who recorded the comments of the patients. In the initial reaction 153 expressed approval that they had been told the truth, 44 denied that they had been told, 17 expressed disapproval, and 17 were noncommittal. Of 41 patients who were seen one to two and one-half years after the first interview 35 had not changed their views, 5 had, and 1 who initially denied that she had been told now talked freely of her condition as cancer. Of 37 who did not deny that they had cancer 26 did not mind others knowing, 10 had not let anyone know, and the attitude of 1 was not clear on this point.

There is no doubt that in Great Britain the word cancer connotes incurable disease with distressing and inevitable death. This fact must surely have its origin in experience, and only new experience rather than exhortation and reassurance will alter this conviction. It has long been British medical practice to conceal from patients the fact that they have cancer, with the consequence that the only diseases known as cancers were uncured or untreated ones. The cured cases were scrupulously labeled as something other than cancer. The effect of this "heads-I-win, tails-you-lose" policy is evident from the incredulity of patient's friends when told the truth. This general ignorance of the possibility of cure was also shown by an opinion survey in the Manchester area in 1954, when 64% of those interviewed did not know that cancer could be cured.

It would seem, therefore, to be an essential part of successful public education on cancer, and in the general interest, that some patients with the more curable types of growth should be told the diagnosis. By the same reasoning those already cured should likewise have the facts presented to them, but by then the effect is much less. If frankness of this sort could be shown, however, to have unexpected and undesirable sequelae, then such a policy would have to be abandoned, however worthy the motive for its continuance might appear. The contrary seems to have been established.

So far as can be discovered 67% of the group preferred to know what was wrong. This proportion, naturally, may measure only the success of the consultants' judgment in deciding whom to tell, but the fact remains that they seemed genuinely glad to know. In some cases telling the diagnosis had the effect of calming fears, the patient having interpreted silence or reassurance, while being referred to a hospital for cancer treatment, as meaning that his case was hopeless. Others felt that to know the truth helped them to fight better and gave them additional resources to call on, and they submitted to treatment in a different spirit and worried less.

In a different category were the 7% who claimed to have been upset by the knowledge of their diagnosis. Some of those who denied they were told may also come into this category. In some cases it was said that the frank use of "the word" was what shocked them, rather than fear that they had an incurable disease, which is itself indicative of an unhealthy state of public opinion. Some admitted that they would have preferred a lie. It must be remembered, too, that this small group of patients, however critical they may have been of the consultant's frankness, have probably had their cancers cured. Moreover, it seems likely that this figure will fall still lower than 7% as public experience grows and public opinion changes. It was concluded that, since most patients were able to accept the truth and benefit from the knowledge, all patients with the more curable cancers, unless obviously unstable, should be told their diagnosis. This is an essential part of public education on cancer, aiming at earlier treatment and higher rates of cure.

Maternity Hospital to Close.—Wiltshire mothers may soon be having their babies at a Royal Air Force station, because the Devizes Maternity Hospital is to close. Another, at Chippenham, is to be cut to one-half its bed capacity. An acute shortage of qualified midwives is the reason. Other small maternity units in different parts of the country have recently had to close or restrict admissions. Midwifery must be made more attractive if sufficient maternity beds are to become available. At present only about 20% of the nurses who qualify as midwives practice as such. Some hospital authorities have advocated a pay raise in the smaller country units, where the responsibility of the individual midwife may in any case be heavier as she has to work more on her own. Ministry of Health medical and nursing teams will soon be visiting some of the areas hardest hit. Their task will be to discover the reasons for the shortage of midwives, to advise on remedial action, and to make recommendations on which future policy can be based. Nursing staff leaders have told Ministry of Health and hospital authority representatives that their proposals for pay increases for 17,000 midwives and 50,000 student nurses were inadequate. More should also be done to improve the status of the midwife.

CORRESPONDENCE

ANTIDOTE FOR PROCHLORPERAZINE INTOXICATION IN CHILDREN

To the Editor:—Many reports have appeared recently on the toxic manifestations of prochlorperazine (Compazine). It is a valuable tool in the symptomatic relief of vomiting in gastroenteritis and measles and in newborn infants. When it is used in appropriate dosage, based on weight, complications are rare. Few more alarming situations can occur than those which are seen in children with prochlorperazine toxicity. The signs, which have been well described elsewhere, include, briefly, an opisthotonic position, rolling up of the eyes, protrusion of the tongue, inability to speak or thick incoherent speech, and catatonic posturings.

In our experience these complications are not related to dosage. We have seen them occur after as little as one rectal dose on each of two successive days and, on the other extreme, after the ingestion of a large number of spansules. We have also noted a lack of toxic manifestations in infants and very young children. Our cases have occurred in the 4-to-10-year age group. Toxicity also has not been noted with use of large doses in otherwise healthy but disturbed children. Toxicity usually has occurred in the very ill child. The suggestion has been offered that an inflamed rectal mucosa enhances absorption of the suppository, but symptoms have been produced when the drug was given by mouth, and it may be that toxicity by rectal medication may be more common only because of the more common use of this route.

In seeking some way to help these children it has seemed that strong coffee administered orally has had some beneficial effect in early and mild cases. We gave caffeine and sodium benzoate intravenously, and the results of this treatment were encouraging. In each case the caffeine and sodium benzoate was given in a dose of 0.5 Gm. In a matter of 25 to 120 seconds each child responded in a dramatic fashion. Paraspinal muscular spasm, eye rolling, posturing, tremors, and confusion were entirely relieved. Two of these children were carried into the office in an agonizing position and in severe distress but were able to walk out unassisted a few minutes later. Symptoms did not return.

Caffeine and sodium benzoate seems to be an effective and rapidly acting antagonist to the toxic manifestations of prochlorperazine. The mechanism of its action is unknown, nor do we know the factors which predispose to toxicity.

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RESPIRATOR TRACHEOTOMY TUBE

To the Editor:—A comment is in order regarding the article entitled "Respirator Tracheotomy Tube" in The Journal, March 21, 1959, page 136. The idea of devising ways to decrease leaks in the system is a good one and is at times highly desirable in respirator patients. Whether a tight fit is absolutely necessary depends on one's philosophy regarding the use of respirators and on the type of respirator unit being used.

A definite danger exists in the use of this type of tube-and-cuff arrangement. The basic idea is sound and has been used by many anesthetists to administer anesthetics and to ventilate patients on the wards, but unless the inflatable cuff is cemented to the metal tracheotomy tube there is the constant hazard that the cuff will slip off and obstruct the patient's airway. Unless this situation is diagnosed quickly and the cuff withdrawn the obstruction may be sufficient to result in death. This danger is made more real in the patient being ventilated by a respirator, due to the constant motion of the tube with each cycle. In the presence of tracheal secretions, even a tight fitting cuff will tend to slide on the metal tube. Rubber cement has been used with success to prevent this. As an additional safeguard in these patients, the inflation tube to the cuff is pulled taut and clamped to the umbilical tape which holds the tracheotomy tube in place. This tends to result in the cuff riding upward rather than off the end. The cuff should be inflated with only enough air to prevent a leak around the tracheotomy tube. It is felt (and without documented evidence) that these cuffs should be deflated for a few minutes every four or five hours to prevent any damage that might result from pressure against the mucosa.

Regarding tracheotomy tubes in general for respirator patients, it seems desirable to use one made of a plastic which would soften at body temperature. This would allow the tube to conform more to the anatomic course of the trachea than do some of the standard metal tracheotomy tubes. For patients breathing on their own, this probably is not a critical factor, but the tube in a respirator patient is in a continual back and forth motion, and if the end impinges on or rubs the tracheal wall an ulceration will result in time. This has been observed, with ulcerations at the cord level, when rubber endotracheal tubes are used.

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MEDICOLEGAL ABSTRACTS

Zoning Restrictions: Right of Physician to Maintain Office in Private Residence.—This was an action to restrain the defendant physician from erecting a combined home and office structure in an area zoned for single family dwellings. The trial court denied the injunction and the plaintiffs appealed to the court of appeals of Ohio.

The defendant, 10 years prior to this suit, had purchased a piece of property which was subject to a restriction that the property "shall be used for (1) resident purposes only and (2) not for any purpose of business or trade." This property was also located in an area zoned for single family residences. After the defendant had completed plans for the erection of a combination residence and office on this location, he learned that some of the nearby residents objected to the building. Although he had been told that no rezoning would be necessary, he applied to the planning commission for a change from single family residential to commercial. This was denied. He then applied for a building permit and this was also denied. The defendant was then advised by the planning commission to take his problem to the board of zoning adjustments. After a hearing before this board, the building inspector's opinion was reversed and a building permit issued. The plaintiffs then took the case to the common pleas court, where an injunction was denied.

On appeal, the plaintiffs contended the defendant was violating both the building restriction and the zoning provisions. So far as the building restriction was concerned, the court of appeals pointed out that the restriction was as to the use of the property. As long as the building was used for residential purposes only there was no restriction preventing its erection. Furthermore, the court pointed out that the restriction itself had been created to run for 35 years and that this period would expire even before the building would be completed.

The zoning ordinance referring to single family residence areas permitted certain accessory uses of property therein so long as the residential character of the property was not infringed. Among other things the ordinance provided: "The office of an architect, attorney, clergyman, dentist, engineer, physician, surgeon or other professional person may be located in a residence or an apartment used by such person as his private residence."

After a consideration of all the evidence relative to the type and character of the proposed building and the use to which the defendant intended to put it, together with the character of the surrounding and adjoining property, the court of appeals was of the opinion that no rezoning was necessary and that the defendant was entitled to erect the building and use it for a combination residence and office. The court also held that the practice of medicine was not to be classed as a trade or business.

The plaintiffs' request for an injunction to restrain the use sought by the defendant was therefore denied. *Diebel v. Wilson*, 150 N. E. (2) 448 (Ohio, 1957).

Libel and Slander: Qualified Privilege.—This was an action for damages for libel and slander against the Health Insurance Plan of Greater New York and its medical director and deputy medical director. The defendant's motion for summary judgment was heard in the Supreme Court, special term, Kings County, New York.

The defendant HIP is a nonprofit medical expense indemnity corporation. Each of the 500,000 insurees of this corporation is given a directory listing the various medical groups which will furnish services for the members and listing the names and addresses of the general practitioners and specialists affiliated with each group. The insuree selects the medical group which is to provide him with medical care. The plaintiff was a director and co-chief of surgery of one of these groups.

In 1953 the two individual defendants were informed that the plaintiff's malpractice insurance was not being renewed for cause. They made an investigation which indicated that the malpractice insurance company had paid some losses on some operations which this plaintiff had performed. Conferences were held at which minutes were recorded. The defendants maintained that they considered not only this question of malpractice insurance but also the opinion of the chief surgeon in one of the hospitals with which the plaintiff was connected and certain changes in his status on the staff of a hospital about which they claimed he made misrepresentations. It was at these conferences and hearings that the defamations complained of were made. The plaintiff avers that, generally speaking, the defamatory statements charge that he is professionally incompetent in his specialty; that appointments at hospitals were not renewed because of incompetency; that he does not possess the minimal hospital requirements of HIP; that he lacks training and skill; and that he deliberately concealed and withheld from the defendant HIP information as to his background, affiliations, and employments.

The plaintiff then went on to allege that the defendants were motivated throughout the hearings by actual malice and that the hearings were "designed to rubber-stamp a pre-determination of the individual defendants to effect his removal from the medical group of which plaintiff was a director and co-chief of surgery." To support this contention he recited some controversy and difficulties he had had with the malpractice defense board of the New York State Medical Society over the purchase of insurance.

On the record, said the court, the defense of qualified privilege was properly interposed and established prima facie. Such a privilege, however,

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may be destroyed by a showing of excessive publication or malice. Here, said the court, the plaintiff presented a triable issue of fact with respect to the existence of actual malice. The defendants' motion for a summary judgment was therefore denied. *Anonymous v. Health Insurance Plan of Greater New York, et al.*, 173 N. Y. S. (2) 74 (N. Y., 1958).

Malpractice: Suturing Nerve to Tendon.—This was an action for damages resulting from the alleged negligence of the defendant physician. From a judgment in favor of the plaintiff the defendant appealed to the Supreme Judicial Court of Massachusetts.

The patient, 15 years of age, had pushed her left hand through two panes of glass and suffered a laceration of her left wrist and flexor tendons. She was taken to a hospital where the defendant operated on her left wrist. The operative report showed that all the superficial tendons, except the flexor tendon to the little finger, had been severed. The deep tendons were intact. Presumably, the upper band of the severed tendon was isolated and brought down and sutured to the remainder. The skin was then closed and the plaintiff's hand was in a plaster cast and Ace bandages for several weeks. When the cast was removed she went to a hospital for physiotherapy, and it was then discovered that there was a loss of median nerve function. In a subsequent exploratory operation it was found that the proximal segment of the median nerve had been sutured to the distal portion of the superficial tendon going to the middle finger. The distal end of the median nerve was found lying free. A proper repair was done but the plaintiff continued to have a sensory loss at the base of her palm and a neuroma in her left wrist.

A medical expert who testified for the plaintiff said that the median nerve is approximately the same size as the superficial tendon, but its color is slightly different. The texture of the superficial tendon is more firm than that of the median nerve, which may be compressed with the fingers. Anatomically the median nerve is not at any time connected with the superficial tendon. In the opinion of this expert if the median nerve had been completely sutured instead of leaving one end lying loose in the wound, and if one end of the median nerve had not been sutured to the superficial tendon, the probabilities are that the plaintiff would have obtained a better result from the operation and would not have suffered a neuroma and sensory loss.

We are of the opinion, said the court, that the jury could warrantably find that the defendant was negligent in not distinguishing the superficial tendon from the median nerve, that the operation was not done with the care and skill generally used and possessed in the community, and that a surgeon who undertakes to operate in a field wherein nerves and tendons are exposed will distinguish them and not unite a nerve with a tendon.

The judgment in favor of the plaintiff was accordingly affirmed. *Fitzgerald v. Leach*, 150 N. E. (2) 12 (Mass., 1958).

MEDICAL FILM REVIEWS

Block Dissection and Pneumonectomy for Bronchogenic Carcinoma, Right Side: 16 mm., color, silent, showing time 21 minutes. Prepared by John F. Higginson, M.D., Portland, Ore. Produced by and procurable on loan from Veterans Administration, Central Office Film Library, Washington 25, D. C.

This film shows the surgical technique of right-sided en bloc dissection and pneumonectomy for bronchogenic carcinoma. Preoperative and postoperative chest x-rays are shown as well as the specimen immediately after surgery. Dissection from the cupola of the chest to the diaphragm is shown in steps. Partial resection of the pericardium is demonstrated as part of the block dissection. This is a well-done film of an accepted operation performed in an acceptable technique, although it is believed that this particular operation is now less popular than it was a few years ago. This fact, however, does not detract from the great value of this film, which, with its opposite number by the same author of a radical left-sided pneumonectomy, makes a perfect lesson for one wishing to study or learn the technique of this operation for either right or left side. The surgical technique and photography are excellent. It is most suitable for showing to surgeons, particularly thoracic surgeons and surgical residents interested in thoracic surgery.

Fascial Transplantation for Paralyses of the Abdominal Wall: 16 mm., color, sound, showing time 11 minutes. Produced in 1958 by Billy Burke Productions, Hollywood, for C. L. Lowman, M.D., Los Angeles. Procurable on loan from E. R. Squibb and Sons, 745 Fifth Ave., New York 22.

This excellent motion picture describes and illustrates the indications and technique for fascial transplantation in paralysis of the abdominal muscles. The procedure was originated by the author. Several patients with paralysis of the abdominal muscles after poliomyelitis are demonstrated before and after the operation. The film shows the importance of the abdominal muscles as a link joining the pelvis and thorax and the part played by these muscles in coordination of movement of the upper and lower halves of the body. The effect of paralysis of the abdominal muscles on the cardiovascular, respiratory, and gastrointestinal systems is discussed. The technique of the operation is shown by drawings and by an operation on a patient and a cadaver. Postoperative physical therapy and end-results are shown. The photography is excellent. The film should be of particular value to the orthopedist and to those in branches of medicine concerned with paralytic disease.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Abdominal Epilepsy. E. Brandrup. Nord. med. 61:59-61 (Jan. 8) 1959 (In Danish) [Stockholm].

Attention is called to abdominal epilepsy as a diagnostic possibility in cases of recurrent acute abdominal pain. Two cases from the neurological department in Odense, in a boy, aged 3½ years, and a woman, aged 44, respectively, diagnosed as abdominal epilepsy, are described. Abdominal (or intestinal) epilepsy is diagnosed when abdominal pain is the only, or the most important, manifestation of an attack in epilepsy. The pain is paroxysmal in kind, sets in suddenly and terminates as suddenly, and the picture is reproduced with stereoptic uniformity time and again. In many patients the pain is accompanied by nausea and vomiting. The disease seems to occur more often in children than in adults. Electroencephalography is a valuable aid in diagnosis. An important point in diagnosis is that the patient reacts to antiepileptic treatment.

Rheumatic Heart Disease Associated with Atrial Septal Defect: Clinical and Pathologic Study of 12 Cases of Lutembacher's Syndrome. J. Espino-Vela. Am. Heart J. 57:185-202 (Feb.) 1959 [St. Louis].

This paper deals with 12 patients who had mitral valvular damage in association with wide atrial septal defect (Lutembacher's syndrome). Embryologically, the defect seems to be the result of extensive resorption of the septum primum with faulty development of the septum secundum. Three of the patients had virtually a single auricle. Although other patients were observed who had the characteristic clinical syndrome, the author limited this report to the 11 cases proved at autopsy and the 1 proved at operation. This seems a relatively high number, and yet it is rather surprising that more cases are not seen, since rheumatic heart disease is responsible for 40% of the admissions to the National Institute of Cardiology in Mexico and since the second most frequent congenital cardiac anomaly is atrial septal defect. Thus, it seems strange not to see these 2 entities associated more often. The ages of the 12 patients ranged from 10 to 71 years. There were 8 females and 4 males.

Clinically, the disease was most frequently typical of severe rheumatic heart disease. The clinical features suggestive of the association of rheumatic valvular disease and atrial septal defect were: (1) atypical auscultatory findings of rheumatic mitral stenosis: no presystolic accentuation of the diastolic rumble; (2) the presence of a systolic murmur accompanied by a palpable thrill in the pulmonary area; and (3) cyanosis of slight to moderate degree (not seen in the absence of heart failure). Supportive roentgenologic evidence of this association were the large size of the pulmonary main trunk and its branches, with vigorous pulsations, in association with a mitral or mitral-tricuspid cardiac contour, and slight or absent left auricular enlargement. Finally, electrocardiographic data suggestive of this diagnosis were the presence of right bundle-branch block and commonly qR-type complexes in lead V_1 with concomitant left auricular enlargement ("mitral" P waves).

In only 3 patients was the diagnosis of atrial septal defect readily apparent, while that of rheumatic heart disease was not so obvious. In 2 patients neither one of the 2 conditions was correctly postulated. One of these patients had aortic coarctation, and the other had lived to the age of 71 years with cardiosclerosis and chronic cor pulmonale.

The Treatment of Cardiac Arrest Following Myocardial Infarction. J. G. McGregor and D. E. Newton. U.S. Armed Forces M. J. 10:125-140 (Feb.) 1959 [Washington, D. C.].

Resuscitation was attempted in 5 patients with cardiac arrest secondary to myocardial infarction in Brooke Army Hospital, Fort Sam Houston, San Antonio, Texas. In cardiac resuscitation it is imperative that cardiac compression and pulmonary insufflation be instituted within 4 minutes after cardiac arrest. In the first patient, a 51-year-old man, the resuscitation by thoracotomy, cardiac massage, and electric defibrillation was successful, because it was instituted at the first sign of ventricular fibrillation. This constitutes the 4th reported instance of successful resuscitation of a patient who sustained ventricular fibrillation secondary to myocardial infarction. It is of interest that the only drug used in this patient was procainamide hydrochloride; it was not given during

The place of publication of the periodicals appears in brackets preceding each abstract.

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the actual resuscitation, but only specifically to prevent the premature beats following defibrillation. This patient is well, except for a moderate angina pectoris. The second patient, a 31-year-old man, died one hour after resuscitation from damage of the central nervous system, probably due to the unnecessary delay in instituting cardiac resuscitation. In the remaining 3 patients the attempt at resuscitation was unsuccessful, because too much valuable time had been lost between cardiac arrest and application of resuscitative measures.

The measures necessary for resuscitation of patients with ventricular fibrillation are not applicable to all patients or to all situations. The condition of the patient should be evaluated; the occurrence of previous myocardial infarctions, the presence of severe systemic disease, the age of the patient, and the minutes elapsed after cardiac arrest should be considered before attempting cardiac resuscitation.

Pulseless Disease (Takayashu's Syndrome). S. S. Misra and S. Prakash. Am. Heart J. 57:177-184 (Feb.) 1959 [St. Louis].

A peculiar syndrome, characterized by absence of pulsations in the carotid and radial arteries, is met with in aortic arch syndromes such as syphilitic aneurysms, rarely in dissecting aneurysms, and also in traumatic injuries of the chest. There is a group of patients in whom there is a primary panarteritis of unknown etiology, and this has been variously described as Takayashu's syndrome or pulseless disease. It is a rare syndrome affecting chiefly young women; hence, it has also been called "young female arteritis." The authors present 3 patients with this rare disease. The first patient, an 18-year-old male Hindu, complained of enlargement of cervical lymph nodes for the last 6 months, anasarca, giddiness, and general weakness for 3 months before admission. Radial, brachial, and carotid pulses were absent on both sides. The patient died, and on autopsy the aorta showed evidence of panarteritis of undetermined etiology. Generalized amyloidosis might have been due to the chronic suppurative cervical lymphadenitis, and the nephrotic syndrome was secondary to the renal amyloidosis. Whether or not there was any correlation between amyloidosis and pulseless disease is difficult to say.

The second patient was a 15-year-old Hindu girl, the youngest patient ever reported to have pulseless disease. Her clinical picture resembled that of the first patient in many respects. In addition to the pulseless condition, she also had cervical lymphadenopathy, which proved to be due to caseating tuberculous adenitis, and a nephrotic syndrome secondary to amyloidosis, which might have been secondary to the caseating tuberculous lymph nodes. The third patient was a 54-year-old Hindu woman, who had chronic progressive obliterative involvement of the radial arteries. A bilateral immature cataract was probably due to the deficient blood supply. Giddiness and numbness and tingling in the left upper limb might be explained as being due to chronic ischemia of the brachiocephalic arteries.

In the first patient no etiological factor could be determined for the panarteritis which resulted in pulseless disease. The second patient had caseating tuberculous cervical adenitis and a strongly positive tuberculin test, which might suggest a tuberculous etiology of the arteritis, as was suggested by Japanese authors. In the third patient an elevated serum cholesterol level and the fact that biopsy of the radial artery showed some atherosclerosis suggested much more advanced atheromatosis in the aorta resulting in obliteration of the pulse. A direct histological examination of the aorta was not possible in the 2 patients who are still alive. Peripheral arterial diseases were excluded in all 3 of the patients by biopsy of the radial artery. A nephrotic syndrome due to amyloidosis, as observed in the first 2 of these 3 patients, has never before been reported in association with pulseless disease.

"Pulseless Disease": Review and Report of Case of Takayashu's Syndrome. J. Fossgreen. Ugesk. læger 121:45-49 (Jan. 8) 1959 (In Danish) [Copenhagen].

The absence of pulse in the cranial part of the body, due to abnormal changes in the great vascular branches originating from the aortic arch, is a symptom which has long been known. More than 100 cases of Takayashu's syndrome or pulseless disease have been published. The disease almost exclusively affects young and middle-aged women. An arteritis is localized to the aorta and the great vessels which leave the aortic arch. The process involves all vascular layers and gradually leads to the obliteration of the lumens of the great branches. The history often reports rheumatic or other infections, and periods of fever are a frequent symptom. The fully developed Takayashu's syndrome is characterized by the absence of pulse in the upper part of the body, trophic changes in the cranium, cerebral symptoms, eye changes, carotid sinus syncope, cardiac symptoms, and development of a collateral circulation; laboratory findings show constantly increased sedimentation reaction. Takayashu's syndrome should be included in differential diagnostic considerations in case of neurological phenomena or disturbances in vision in younger women, especially if the symptoms are vague. Careful palpation of the arteries of the head and arms will give the correct diagnosis. The prognosis is unfavorable. If, however, there is only closure of the subclavian arteries, the outlook can be more optimistic. The patients live between 1 and 20 years after onset of the symptoms. Death is usually due to ischemic brain lesions. No causal therapy is known. Corti-

sone or prednisone may possibly prevent progression of the inflammatory process. The patient should avoid overexertion, and frequent periods of rest are advantageous. Carotid sinus syncope can be treated with atropine or irradiation of the carotid sinus. Antibiotics are without effect. Detailed report is given of the case of a woman, aged 32 years.

The Diagnosis of Thyroid Disease in Private Practice. J. Marks and R. L. Fulton. Ohio M. J. 55:186-190 (Feb.) 1959 [Columbus].

The authors studied 230 patients in order to ascertain to what extent the 24-hour radio iodine (I^{131}) uptake determination was correlated with the clinical diagnoses of the patients. Determinations of basal metabolic rates and serum cholesterol levels, being available in many of the observed patients, were similarly analyzed. Of the 230 patients, the condition of 174 was diagnosed as euthyroid, of 45 as hypothyroid, and of 11 as hyperthyroid. Of the latter group, 7 patients had Graves's disease, and 4 had toxic nodules. Data indicate that the 24-hour I^{131} uptake determination has a high degree of correspondence with clinical thyroid diagnoses and should be employed whenever possible in helping to establish the status of the thyroid gland. Determination of the basal metabolic rate has been used for many years in the evaluation of thyroid gland function; these studies further established this test as a worthwhile procedure in the study of the thyroid gland. The serum cholesterol determinations performed in this series were inconstant and of questionable value in evaluating the function of the thyroid gland.

While the I^{131} uptake and the basal metabolic rate determinations are helpful tests, they impose a challenge on the clinician in many borderline patients with hypothyroidism and hyperthyroidism. The practicing physician is obliged to hold to his clinical impression at times when the imposing documentation of the scintillation counter or the oxygen consumption curve is at variance with his judgment. The authors believe that neither the 24-hour I^{131} uptake test nor the basal metabolic rate are clearly diagnostic in many borderline cases and that, even after an entire "battery" of tests have been performed, the clinician must still come to a conclusion on clinical grounds.

Intrahepatic Cholestasis. C. M. Leevy. Am. J. Surg. 97:132-136 (Feb.) 1959 [New York].

"Intrahepatic cholestasis," a descriptive term proposed for obstruction to bile outflow incident to a pathological process which originates within the liver (J. A. M. A. 150:1367-1372 [Dec. 6] 1952), may be produced by a variety of medical diseases. According to the initiating clinicopathological process, the author classified his patients with intrahepatic cholestasis into 3 groups, namely, those with functional cholangiolar disease, those with neonatal hepatitis, and those with interlobular bile duct degeneration and atresia. The course in 22 patients with protracted jaundice due to functional cholangiolar disease is described. Bile stasis without morphologic alteration of the parenchymal cell or biliary network occurred during the course of viral hepatitis in 5 of the 22 patients and after the administration of various drugs, such as chlorpromazine, methimazole, methyltestosterone, arsenicals, and sulfonamides, to 17. Usually jaundice rapidly subsided, and complete recovery occurred in 18 of the 22 patients. Jaundice persisted in 4 patients, and subsequent studies showed portal fibrosis in 1 and biliary cirrhosis in 3.

Unfortunately in many patients it is not possible to distinguish intrahepatic cholestasis clearly from extrahepatic biliary obstruction which requires surgical therapy. The history, biochemical liver function tests, liver biopsy, and special laboratory procedures may be helpful in individual patients. Early operative exploration with biopsy and cholangiography is often desirable to eliminate the possibility of an extrahepatic obstruction in patients with progressive jaundice attributed to functional cholangiolar disease, neonatal hepatitis, and atresia of the interlobular bile duct. Surgical intervention in these conditions is poorly tolerated, and an attempt should be made to minimize surgical trauma.

Incidence of Gall Bladder Disease in "Normal" Men. R. S. Wilbur and R. J. Bolt. Gastroenterology 36:251-255 (Feb.) 1959 [Baltimore].

Routine cholecystograms on 1,233 male executives, with an average age of 46.8 years, were performed at the University Hospital in Ann Arbor, Mich., during the last 10 years. These studies on active men in the prime of life have revealed a higher than expected incidence of roentgenologically shown biliary dysfunction. Of these 1,233 "normal" men, 182 showed some evidence of gallbladder abnormality past or present, although they averaged less than 50 years of age. Of these 182 men, 92 had visible stones, 25 had had their gallbladders removed, 20 demonstrated definite evidence of gallbladder disease manifested by nonvisualization of the gallbladder, and 45 exhibited faint visualization of the gallbladder. Of the 92 men with visible stones, 59 were completely asymptomatic; of the remaining 33, two-thirds had only the unreliable symptoms of dyspepsia and epigastric pain. These same symptoms occurred in 43 men out of a group of 488 in whom no organic disease was demonstrable in the gallbladder or elsewhere. It is also interesting to note that 6 of 16 men, previously subjected to cholecystectomy

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and with no other cause for symptoms, still had indigestion and epigastric pain. Typical "biliary colic" had occurred in only 3 men with visible stones and in 4 men out of the group of 488 with normal cholecystograms.

Even if the incidence rate of gallbladder dysfunction among employed men throughout the United States were a good deal lower than that in this series, the number of active American men with asymptomatic gallstones must be in the millions. The fact that the incidence of gallstones in men rises sharply after the retirement age is reached and that the percentage in women is significantly higher than that in men until the 7th decade clearly illustrates the magnitude of the problem of the "silent gallstone." The authors think that cholecystectomy, in the absence of true biliary colic or jaundice, should not be performed in the hope of relieving vague indigestion or dyspepsia, just because the cholecystogram demonstrates stones.

Intestinal Polyposis Associated with Melanin Spots: Peutz-Jeghers Syndrome. J. Guillard, R. Laumonier, J. Seyer and R. Boulet. Presse méd. 66:2076-2079 (Dec. 25) 1958 (In French) [Paris].

The hereditary nature of intestinal polyposis associated with melanin spots was observed in 10 members belonging to 3 generations of a family. The father of the first generation died, at the age of 56 years, of occlusion of the small intestine, which was attributed to periodic mild episodes of abdominal occlusions. One of the 2 sons in the second generation, at the age of 46 years, had a true Peutz-Jeghers syndrome. Melanin spots were noted on the interior side of the left cheek, on the cornea, and around the eye. Multiple polyps were present in the stomach, and one in the ileum. The patient had had periodic abdominal pain for 6 years, which had intensified recently. Of his 5 children (third generation), the eldest daughter, 19 years of age, who was the starting point of this genealogical investigation, had a true Peutz-Jeghers syndrome. A 17-year-old son had diffuse melanin spots of the oral mucosa and lips, and another son died, at the age of 8 years, of an ileoileal invagination.

Both father and daughter were operated on for multiple polyposis and had a satisfactory recovery. The daughter had had intense abdominal pain related to occlusion, which had been accompanied by vomiting for 3 years before the operation. She had polyps in the stomach, and there was a double invagination of, and several polyps in, the jejunum. Microscopic examination of the specimens obtained by aspiration biopsy of the stomach in both patients revealed proliferation of benign polyps, accompanied by retrogression of the mucosa of the fundus of the stomach. The histophotometric test disclosed that polyps in both patients were benign lesions, exhibiting mild nuclear activity.

Pernicious Anemia: A Disease of the Senile and Presenile Ages. G. Benedetti and P. Ulivieri. Gior. gerontol. 6:965-970 (Dec.) 1958 (In Italian) [Florence, Italy].

Recent statistical studies show that pernicious anemia, up to recent times considered a disease of middle age, is frequent in people of the senile and presenile age groups. Pernicious anemia, at least in its beginning phase, is a disease of the digestive apparatus, and the study of its occurrence in senile patients may be revealing insofar as these patients are more liable to suffer episodes of protein and vitamin deficiency as well as alterations of the gastrointestinal functions. The authors observed 11 patients, 52 to 77 years of age, with pernicious anemia and report on the clinical symptoms and on the treatment followed in curing these patients. Sex did not account for any substantial difference in the frequency of the disease and in the clinical manifestations. Most of the patients presented clear signs of bone marrow hypoplasia, and the patients most advanced in age had almost an aplasia. "Associated" or "masked" pernicious anemia was present in most of the patients, who presented also a cardiocirculatory decompensation syndrome. The study of gastric secretion showed that all patients, except one, showed signs of histamine-resistant achylia. Disturbances of the glandular system, mainly hypothyroidism, were present in the patients most advanced in age, and especially in those who had not responded to hepatotherapy.

Half of the patients most advanced in age before the occurrence of the symptoms of anemia had been treated with antibiotics, given in large doses and for long periods of time, on account of pneumonia, bronchitis, or bronchiectasis. In these patients hepatotherapy and vitamin B_{12} had had no effect, and the patients were subjected to blood transfusions of 100 to 150 cc. each time. The amount of blood given at each transfusion was kept low in order not to overcharge the circulation, since most of the patients had cardiac decompensation. The blood transfusions had a good and immediately stimulating effect—the appetite returned, atrophic manifestations of the tongue and gastrointestinal disturbances disappeared, and the condition of the bone marrow improved. The transfusions were always combined with vitamin B_{12} given parenterally, iron preparations given by mouth or intravenously, vitamin B complex, vitamin B_6, and large doses of cocarboxylase given intravenously. The results obtained with this therapy were good in most of the patients and were very good in the remainder.

SURGERY

Clinical and Statistical Considerations on 1,000 Cases of Malignant Tumors of the Breast. F. de Bernardis. Acta chir. italica 14:647-684 (Sept.-Oct.) 1958 (In Italian) [Padua, Italy].

A clinical and statistical study on 1,000 patients with malignant tumors of the breast observed in the surgery clinic of the University of Padua from November, 1939, to December, 1956, is presented. Eleven patients were male, and the others were female; most of them were in the 5th or 6th decade of life. Epithelial tumor, especially pure adenocarcinoma, was the most frequent form observed. The tumor was still in the first or second stage in most of the patients. Eighty-one women had undergone previous operation for benign tumor of the breast. In 48 patients a definite relationship between the tumor and a trauma in the genital system was found. Metastasis was present in 56% of the patients operated on. Roentgenotherapy was beneficial, especially when used immediately after radical operation.

The general therapeutic procedure was as follows: Early radical mastectomy (Halsted technique) was performed whenever possible; at least one cycle of roentgenotherapy was given as soon as the operative wound had healed; large doses of androgen hormones were administered to the patients who presented metastasis even if the metastasis was localized or if it had been removed surgically. Patients on whom it was not possible to operate were given roentgenotherapy as soon as possible and were injected with large doses of cytostatic, chemotherapeutic, antineoplastic substances; adrenalectomy and hypophysectomy were performed when acceptable to the patients. The results of the treatment could be followed in 980 patients. Two years after the initial treatment 70% of the patients were still alive, and 5 years after 42% were alive. Later observations showed that 39% of the patients were still alive, but 61% had died.

The Direct Risk of Cholecystectomy: Analysis of 1,458 Operations. M. W. van Weel. Nederl. tijdschr. geneesk. 103:6-11 (Jan. 3) 1959 (In Dutch) [Amsterdam].

The author cites evidence indicating that it is erroneous to believe that cholelithiasis which causes no symptoms is "innocent." Any gallstone condition is potentially dangerous, so that, if it were not for the risk of the operation, it would be advisable to remove the gallbladder whenever there is a definite diagnosis of gallstones. To ascertain the risk, the author analyzed a total of 1,458 gallbladder operations, of which 1,217 were interval operations and 241 were "hot" cholecystectomies, that is, they were performed during acute cholecystitis. Interval operations were performed on 987 women and on 230 men, the ratio of women to men being 4.3:1; operations during the acute stage, however, were performed on 171 women and on 70 men (ratio of 2.2:1). The majority of patients in both groups were over 50 years of age, but whereas interval operations were most frequent in patients between 50 and 59 years, operations for acute cholecystitis were most frequent among those between 60 and 69 years of age.

A tabulation of findings during interval operations shows that cholelithiasis without infection existed in 49.8% of the women and in 26.1% of the men and cholecystitis with stones in 48.4% of the women and in 70% of the men. The choledochus was explored in 53.4% of the women and in 63% of the men; and stones were found during choledochal exploration in 38.4% of the women and in 57.3% of the men. There was no great difference between the sexes with regard to the incidence of pancreatitis and carcinoma of the gallbladder. Complications were somewhat more frequent and more severe after operations during acute processes than after interval operations. The surgical mortality has been reduced to very low levels, being 0.25 and 2.5%, respectively, for 1,217 interval operations and 241 "hot" operations. Thorough diagnostic studies and careful selection of patients are important. Furthermore, the operation should be performed at the earliest possible stage of the disease. In patients with acute cholecystitis the author recommends immediate cholecystectomy.

Iliofemoropopliteal Arterial Reconstructions for Arteriosclerosis Obliterans: Factors Influencing Late Patency. R. Warren and J. L. Villavicencio. New England J. Med. 260:255-263 (Feb. 5) 1959 [Boston].

The authors report on 70 patients with obliterative arteriosclerosis, on whom iliofemoropopliteal arterial reconstructions were performed at the West Roxbury Veterans Administration Hospital and the Peter Bent Brigham Hospital in Boston between 1953 and 1956. The upper ends of the arterial reconstructions were below the origin of the external iliac artery. Three different methods of reconstruction were employed, namely, arterial homografts in 36 patients, venous autografts in 13, and thromboendarterectomy in 21. The incidence of patency for at least one year after the operation was 9% for arterial homografts, 18% for venous autografts, and 55% for thromboendarterectomy. The best results in this series and the best results that have been reported to date by other workers, in terms of long-term patency of reconstructed iliofemoral segments, have been those of thromboendarterectomized segments; these were operated on by the intraluminal stripping technique, and the patients were discharged from the hospital with the circulation restored.

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Roentgenologic studies and pathological studies by biopsy of reconstructed segments or by amputation showed that the thromboendarterectomized segments underwent a marked reaction of fibrosis during the first 6 months after the surgical intervention. If they survived this period, further reaction did not take place, and relative long-term patency could be expected. In the venous autografts, a similar susceptibility was observed during the first 6 months after the surgical intervention, presumably resulting from a variety of factors, such as constriction of anastomosis, irregularity of the segment itself, taut adventitial bands, and external hematomas. If the grafts did not close because of these factors in the first 6 months, relative long-term patency could be expected. Progressive lesions occurred postoperatively in 50% of the arterial reconstructions performed with the aid of arterial homografts. These lesions consisted of mural thrombus, rapid degeneration with calcification, aneurysm, and late degeneration similar to that resulting from arteriosclerosis. Later closures occurred in these segments, and in others that showed no lesions, to the extent that no security against closure was gained with the passage of time.

There was no relation of the level of serum cholesterol or the incidence of other obliterative arteriosclerotic lesions to the lesions occurring in the reconstructed segments or the incidence of closure of reconstructions. Twenty per cent of the extremities in which closure of the arterial reconstructions occurred became worse, and of these about 50% required amputation, which probably would not have been necessary if the reconstruction had not been attempted. It is emphasized that the implications concerning long-term patency drawn from this study of arterial reconstructions, the upper ends of which were situated not higher than the external iliac artery, are not applicable to reconstructions of the aorta and common iliac arteries, which have a higher incidence of late patency.

Dermoid and Epidermoid Tumors in the Central Nervous System of Adults. C. S. MacCarty, M. E. Leavens, J. G. Love and J. W. Kernohan. Surg. Gynec. & Obst. 108:191-198 (Feb.) 1959 [Chicago].

The authors reviewed the records of patients with epidermoid and dermoid tumors of the central nervous system observed at the Mayo Clinic up to and including 1955. They define epidermoid tumors as neoplasms of congenital origin comprised of the outer layer of the epidermis, squamous epithelium, and desquamated epithelium—and occasionally an outer layer of fibrous and connective tissue. The stratified squamous epithelial layer contains keratohyaline granules. Dermoid tumors are teratomas composed primarily of skin and its derivatives. They differ from the more complex teratomas, which usually contain residues of tissue representing all 3 germ layers. Both epidermoid and dermoid tumors are considered to be congenital in origin. The dermoid tumors are the most frequently seen in conjunction with a dermal sinus except in adults and appear symptomatically earlier in life than the epidermoid tumors.

The total of 77 patients included 45 with epidermoid and 32 with dermoid tumors, but this report is concerned chiefly with the 63 adult patients (over 15 years of age), 44 of whom had epidermoid and 19 dermoid tumors. Of the 44 epidermoid tumors, 24 were located intracranially, 14 in the skull, 3 encroached on the orbit as well as extending intracranially, and 3 were intraspinal in location. Twenty-one of 24 intracranial epidermoid tumors were treated surgically; 11 were removed completely, 8 were incompletely removed, and in 2 it was not known whether removal was complete or incomplete. There were 4 hospital deaths. Of the 17 patients who survived operation, 1 died in 4 months. Follow-up data on 8 patients an average of 7.3 years after operation show that 2 have recurrences and 6 do not. The 14 intradiploic epidermoid tumors were removed without a death, and only 1 tumor recurred. Three intraorbital tumors were successfully removed. The 3 adult patients with spinal epidermoid tumors survived.

The 19 dermoid tumors were located as follows: intracranial (9), intradiploic (4), intraorbital (1), and intraspinal (5). Six of the 9 intracranial dermoid tumors were supratentorial. All 6 patients with supratentorial tumors were operated on, but the tumor of only 1 was removed completely. The latter patient was alive 18 years and 5 months later, but was still having occasional seizures. There were 2 hospital deaths in the group. One patient was alive and well 7 years after incomplete resection of the tumor. Another was alive and well 16 years after operation. The 6th patient was not traced. All 3 patients with infratentorial tumors were successfully operated on and are alive without recurrences. The 4 adults with intradiploic dermoid tumors had their tumors successfully removed. In the one patient with an intraorbital dermoid tumor, the tumor was removed except for a small piece of capsule attached to the globe. The patient had survived 5 years and 10 months at time of follow-up examination. Of 5 patients with intraspinal dermoid tumors, 3 had intradural intramedullary tumors of the conus and filum; 1 had an intradural extramedullary tumor of the cauda equina; 1 had a low lumbar caudal tumor with a spina bifida. Of the 3 patients with intramedullary tumors of the conus, 1 had complete removal of the tumor and 2 had incomplete removal. One patient with an intradural extramedullary tumor of the cauda equina had complete removal with sacrifice of adherent nerve roots. One patient had a dermoid tumor weighing 670 Gm. and associated spina bifida oc-

culta; this dermoid was completely removed. In patients with intramedullary conus lesions, the postoperative management of functions of bladder and intestine presented difficulties.

Congenital anomalies were associated with 3 of the epidermoid tumors and with 50% of the dermoid tumors. These anomalies included anomalous fusion of vertebrae, cyst of the septum pellucidum, presence of dermal sinuses, harelip, pilonidal sinus, cysts under the occipital portion of the scalp at birth, cervical rib, meningocele, and spina bifida. A surprising number of patients with both groups of tumors involving the intracranial, intraorbital, or intradiploic areas had mental symptoms. There were 4 operative deaths in 41 patients with epidermoid tumors and 3 operative deaths in 32 patients with dermoid tumors. Long survival may occur in these cases, even though the tumor is incompletely removed.

Prednisone in Chronic Lymphoedema of the Legs. J. Calnan and S. C. Truelove. Brit. J. Plast. Surg. 11:329-334 (Jan.) 1959 [Edinburgh].

Chronic edema of the legs, when not due to cardiac or renal disease, may be due to one of several causes. In tropical elephantiasis, the lymphatics are blocked by Filaria bancrofti. In tuberculosis, an analogous blocking of lymphatic drainage may occur through scarring. A large venous thrombosis may leave a chronic lymphedema as one of its sequels. A carcinoma may infiltrate the main lymphatics of a limb. Deep x-ray therapy may cause fibrosis which, in turn, produces lymphatic obstruction. In some patients the condition follows accidental trauma or surgery. Yet, when all these known causes are excluded, there remain many patients with chronic lymphedema of the legs. The most common variety is known as lymphedema praecox, because it develops in adolescence. The condition is chronic and persists throughout life, usually becoming progressively more severe. In some families the condition runs through several generations, and it is then known as Milroy's disease. One of the striking features of chronic lymphedema of unknown etiology is its predilection for the female, at least 10 times as many women as men being affected. Another feature is that the lymphatics are not necessarily blocked.

Treatment is unsatisfactory. It is impracticable to confine otherwise healthy patients to bed; yet, while they remain ambulant, the disease shows an inexorable progression. In due course the disability becomes so severe that surgical maneuvers are resorted to in an attempt to diminish it. Excision of the deep fascia can be performed in order to encourage anastomosis between superficial and deep lymphatics. This operation is of little permanent value. It has now been largely abandoned in favor of excision of the affected skin and subcutaneous tissue, which is replaced by skin grafts. Various other surgical approaches have been made, but no method gives permanently satisfactory results. During recent years there have been reports about beneficial effects from cortisone or its analogues in chronic lymphedema. The authors used prednisone in treating 5 patients with lymphedema.

The results suggest that prednisone is not a treatment of general application in lymphedema. There is usually lessening of the edema (4 of 5 cases in the present series) when a full therapeutic dose is used, but the improvement is lost on reducing the prednisone to a level which would be safe for continuous maintenance treatment. Nevertheless, the authors regard the lessening of edema as of great theoretical interest. It seems improbable that there would be any such effect if the condition were due to purely mechanical factors; in other words, the abnormal limbs are in a dynamic state. Chronic lymphedema differs from other types of chronic edema in that the limb does not pit on pressure, but a similar nonpitting edema can occur in congestive heart failure if the condition persists long enough for fibrotic changes to supervene. Prednisone has been known to cause disappearance of the ascitic fluid, an effect which has been attributed to inhibition of aldosterone secretion. Similarly prednisone has been shown to reduce the edema of congestive heart failure. It seems important to look for evidence of a disturbance of water and electrolyte metabolism with special reference to hormonal influences. The effect of prednisone may possibly be due to the inhibitory effect that it has on the patient's adrenal glands.

The Natural History of Esophageal Varices: A Study of 115 Cirrhotic Patients in Whom Varices Were Diagnosed Prior to Bleeding. L. A. Baker, C. Smith and G. Lieberman. Am. J. Med. 26:228-237 (Feb.) 1959 [New York].

In 115 patients with cirrhosis of the liver, the diagnosis of esophageal varices was established, without a history of hemorrhage, by esophagoscopy performed at the Veterans Administration Hospital in Hines, Ill. The clinical course of these patients was uninterrupted by surgical intervention, and the patients were followed for intervals varying from 1 to 6 years and for an average of 3.3 years. Forty-one of the 115 patients were living and 74 were dead at the time the data were assembled. Bleeding from esophageal varices had occurred in 33 (28.6%). There were 20 (17.3%) who died of exsanguination, 31 (26%) who died of hepatic failure, and 23 (20%) whose deaths were due to unrelated causes. Eleven patients (9.5%) died of exsanguination during the first episode of bleeding. About 90% of the deaths from liver disease occurred within 2 years after varices were diagnosed.

Knowledge of these aspects of the natural course of the disease in such patients is necessary before it is possible to know what must be accomplished by routine prophylactic surgical shunt procedures, an admittedly radical form of prevention, in order to establish the validity of this surgical policy. Inasmuch as the essential difference in the objective of this policy, over the practice of reserving surgical intervention for those patients who have sustained a hemorrhage, is directed toward preventing death from the first hemorrhage, this becomes the most important datum in this study. It is estimated that by the time all 115 patients are dead, between 10 and 15% will have died of first hemorrhage. This, then, is the ultimate possible goal of achievement against which must be balanced the mortality rate, failures, and complications of routine prophylactic decompression surgery.

The unexpectedly long survival of some patients with esophagoscopically established varices, the relatively small proportion of suitable cases, the incidence of death due to causes other than hemorrhage from varices, and the substantial operative and preoperative risks indicate that at present routine prophylactic decompression surgery does not seem to offer any definite advantages to the patient. If further experience on a large scale reveals (1) criteria for determining those patients most likely to bleed, (2) that the over-all surgical mortality rate can be lowered to about 5%, (3) that surgical treatment prevents hemorrhages in nearly all patients over a period of years, or (4) if it is shown that there are serious remote untoward effects of hemorrhage on the course of the disease, this conclusion may well be unwarranted.

Pulmonic Stenosis with Intact Interventricular Septum. H. L. Gadboys, R. H. Kyle and R. P. Glover. Surg. Gynec. & Obst. 108:175-181 (Feb.) 1959 [Chicago].

Surgeons are coming to the point of deciding whether all cardiac surgery should be done by open-heart techniques, or whether certain intracardiac procedures will continue to be best done without the complexity of a direct visual approach. In pulmonic stenosis with intact interventricular septum the obstruction is generally valvular, and, unlike the indurated tissues of rheumatic valvular stenosis, the involved pulmonic valve tends to remain pliable for many years. Consistently excellent results should be attainable in these patients. During the past 7 years the authors operated on patients with valvular pulmonic stenosis with intact interventricular septum by a modified Brock transventricular valvotomy. A smaller group with intact septum required infundibular resection. There were in all 46 patients (19 males and 27 females), who ranged in age from 2 to 42 years, with an average age at operation of 13 years. Thirty-four patients were subjected to transventricular valvotomy only, 6 had infundibular resection, and 6 had both valvotomy and infundibular resection. The diagnosis in all but 3 patients was ascertained by catheterization.

There were no operative deaths in patients treated by closed valvotomy and/or infundibular resection. One patient with infundibular and valvular stenosis died 8 months after the operation was performed. The average peak systolic pressure gradient was 102 mm. Hg preoperatively. Operative pressure studies showed a drop from 97 to 44 mm. Hg for the series. Twenty-one patients were recatheterized, an average of 3½ years after the operation, and the gradient for the series has further decreased to 33 mm. Hg. The mean postoperative gradient for the patients with valvular stenosis alone was 28 mm. Hg. Clinical results were good to excellent in 86% of the patients.

The authors feel that in the rapidly progressing field of cardiac surgery there is little room for dogmatic statements about specific surgical methods. The possibility of overlooking an interventricular septal defect and the sometimes uncertain results with infundibular resection led them to elect direct visual methods for the correction of infundibular stenosis in any combination. They are not yet ready, however, to disown the simple, safe, Brock-type valvotomy as the treatment of choice for pure valvular pulmonic stenosis.

Biopsy of the Apex of the Axilla in Carcinoma of the Breast. C. D. Haagensen and S. J. Obeid. Ann. Surg. 140:149-161 (Feb.) 1959 [Philadelphia].

Over a period of 20 years the authors have made an effort to learn to select patients with carcinoma of the breast in whom the diseased tissue cannot be removed by the classical Halsted radical mastectomy. They found that their clinical criteria of operability were not strict enough. Impressed by Handley's observation of the frequency of occult metastases in the internal mammary nodes, and by Dahl-Iversen's finding of occult metastases in the supraclavicular nodes, they began to remove these lymph node groups as a preliminary biopsy procedure, for the purpose of ascertaining the presence of occult metastases at the periphery of the regional lymph node filter. They tested but finally abandoned biopsy dissection of the supraclavicular region, because they learned that the absence of metastases in this area does not preclude their presence in the nearby subclavicular nodes at the apex of the axilla. Their experience indicated that metastases in the apexes of axillary nodes, which constitute the final barrier in the axillary portion of the regional lymph node filter, mean incurability by radical mastectomy.

Biopsy of the apex of the axilla, which the authors substituted for supraclavicular biopsy in their triple biopsy procedure, removes the so-called sub-

clavicular group of lymph nodes. In anatomic terms this means removal of the areolar and fatty tissue, together with the contained lymph nodes, from a small pyramidal area at the apex of the axilla. The cephalad plane of the pyramid is the axillary vein. Its dorsal plane is the chest wall in the vicinity of the first rib. Its ventral plane is the dense tough layer of the deep axillary fascia which spans the apex of the axilla beneath the pectoralis major muscle. The base of the pyramid faces laterally, and is defined by the thoracoacromial vessels. Its apex is the point at which the axillary vein passes beneath the tendon of the subclavius muscle and the clavicle. In terms of surface anatomy this pyramidal area lies just caudad to the middle third of the clavicle. The complete triple biopsy, which the authors employ as a preliminary operative procedure, consists at present of the 3 following steps: (1) biopsy of the primary tumor to establish the presence of carcinoma; (2) biopsy of tissues in the first, second, and third interspaces along the internal mammary lymphatic route; and (3) biopsy of tissues at the apex of the axilla along the axillary-supraclavicular lymphatic route.

Biopsy of the primary tumor is done through a 3-cm. or 4-cm. incision. A small wedge is excised for frozen section. The whole tumor is excised for biopsy only if it is less than 1 cm. in diameter. If carcinoma has been proved by frozen section, the biopsy wound is closed with a running suture. It is then sealed with a patch of rubber dam cemented in place with dermatone cement. This is important when another biopsy or mastectomy is to follow. Serum and blood containing carcinoma cells ooze from any biopsy wound unless it is sealed off in this way, and these cells may be implanted in another wound. The internal mammary biopsy is next performed. Instruments, drapes, gowns, and gloves are changed, and the skin is prepared anew, to avoid the possibility of transplanting carcinoma from the first biopsy wound to the second. For the third biopsy, that of the apex of the axilla, instruments, drapes, gowns, and gloves are again changed. Data obtained for the first 100 patients, on whom the described triple biopsy was performed, are tabulated, and illustrating case histories are presented. Indications for the performance of biopsy of the apex of the axilla are outlined on the basis of experience in the first 100 cases.

Hepatic Lobectomy. A. Brunschwig. Am. J. Surg. 97:148-150 (Feb.) 1959 [New York].

Of 75 patients undergoing excisional procedures on the liver for neoplasms of various types, 20 had a right hepatic lobectomy and 14 had a left hepatic lobectomy. Fourteen of the 20 patients had a simple right hepatic lobectomy, and 6 had a complex right hepatic lobectomy, i. e., right hepatic lobectomy and, in addition, partial pancreatoduodenectomy, or partial left hepatic lobectomy, or right colectomy. Of the 14 patients undergoing simple right hepatic lobectomy, 2 had massive angioma, 5 had primary hepatic malignant hepatoma, and 7 had metastatic carcinoma from previously resected primary lesions (6 in the colon and 1 in the uterus). Both patients with angioma were living and well 7 and 6 years after the lobectomy. Of the 5 patients with primary malignant hepatoma, 2 died after the operation, 1 lived for 2 years and died of recurrences, and 2 patients were living and well, each 6 years after the operation. Of the 7 patients with metastatic carcinoma, 3 died after the lobectomy, and the other 4 who lived up to 14 months obtained various degrees of palliation, mainly in the form of pain relief. All 6 patients undergoing complex right hepatic lobectomy had carcinoma of the gallbladder invading the porta hepatis and upper margin of the head of the pancreas; 5 of them died after the operation, and the 6th patient was living but had recurrences.

Of the 14 patients undergoing left hepatic lobectomy, 2 had a left hepatic lobectomy in conjunction with radical gastrectomy for cancer of the stomach. One of these lived for more than 17 years, and the other lived 1 year. In 2 patients left hepatic lobectomy was performed in conjunction with resection of gastric stumps and loops of jejunum for recurrent cancer of the stomach; both patients survived about 6 months. Eight patients underwent left hepatic lobectomy for metastases from cancer of the colon, uterus, and breast. There were 2 operative deaths, and survival varied from 6 to 23 months in 6 patients. One patient with carcinoma of the bile duct lived 18 months, and one with primary angiosarcoma was living and well 9 months after the lobectomy.

Malignant Lymphomas of the Gastrointestinal Tract. J. W. Grazer Jr. Surg. Gynec. & Obst. 108: 182-190 (Feb.) 1959 [Chicago].

This report is concerned with malignant lymphomas of the gastrointestinal tract seen at Duke Hospital, Durham, N. C., between 1930 and 1952. The record library lists were checked with the autopsy reports to include any localized lymphomas that were not diagnosed clinically. Each case history was evaluated, and surviving patients were asked to return for follow-up examination. If the patient failed to return, a questionnaire was sent to both the patient and the referring physician. All 31 patients whose records were found in the files were traced for evaluation of 5-year or longer follow-up results. The 31 patients included 8 with reticulum-cell sarcomas, 9 with lymphoblastic lymphosarcomas, 12 with lymphocytic lymphosarcomas, and 2 with mixed types. Patients with Hodgkin's disease or with giant follicular lymphoma localized to the gastrointestinal tract were not found in this group.

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At its inception the lymphoma is located submucosally and may grow either as a polypoid mass or as a diffuse infiltrating lesion beneath the mucous membrane. The submucosal extension makes it very difficult for the surgeon to define the limits of the tumor. This explains the cases in which tumor tissue is found at the line of resection after supposedly adequate removal.

Eighteen of the 31 malignant lymphomas were in the stomach. The symptomatology was not characteristic, but an ulcer-like syndrome was seen frequently. Sixteen of the 18 patients had lost weight exceeding 10 lb. (4.5 kg.), 15 had epigastric burning pains or aches, and 11 had nausea and vomiting. A mass was palpated in 8, and 6 had had hematemesis or melena. In general, the over-all clinical appearance of these patients was much better than that of patients with carcinoma of the same extent. A palpable mass, while indicating a large tumor, does not preclude a cure, since 2 patients with large masses are still alive 6 and 26 years after resection. All 18 patients with gastric lesions underwent exploratory laparotomy. Resective surgery proved impossible in 7 of these patients. Nine subtotal resections were done with the hope of cure, and 2 additional patients had resections for palliation. Of the 9 patients on whom resection was performed for cure, 7 lived for more than 5 years. Two of the patients with "curative" resections died 7 months and 9 months after surgery despite radiation therapy, whereas in comparison the 2 with palliative resections survived 2 months and 2 years respectively. External radiation was the primary means of therapy in 6 of the 7 patients considered to have inoperable lesions. While 4 of the 6 obtained some palliation, all 6 were dead within 12 months. Nitrogen mustard was given to 2 patients with rapidly growing nonresectable lesions, but no real improvement was noted even though bone marrow depression indicated a good therapeutic level of the drug.

The duration of symptoms in the 11 patients in whom the malignant lymphoma was in the small intestine was considerably shorter than in the patients with gastric lymphomas. Only one patient had symptoms for as long as 2 years. The early symptoms consisted mainly of cramping epigastric and midabdominal pain associated with general malaise. The diagnosis was established only after abdominal exploration. One patient died within one month after an enteroenterostomy. Of the 10 patients who underwent resections, 3 lived 5 years or longer and are still alive from 6 to 22 years after operation. One elderly woman died 3 years and 4 months postoperatively of a coronary occlusion. The remaining 6 patients died within 2 years, 4 surviving for only 2 months after surgery. Five patients received roentgen-ray irradiation after surgery, but palliation of 6 to 8 months' duration was achieved in only 2. Four patients were given triethylene melamine (TEM) to slow their rapidly progressive disease. No beneficial effect was detected.

Two of the lymphomas were limited to the colon. Both patients presented themselves with symptoms of intestinal obstruction with a palpable mass. A 6-year-old boy died 2 months after a colectomy of the ascending colon was performed. A lesion of the transverse colon was seen in a 51-year-old man, and at operation the transverse colon was perforated. Despite a wide resection he succumbed with peritonitis. Surgical excision is the primary treatment in patients with malignant lymphoma of the gastrointestinal tract.

Liver Decompression by Drainage of the Common Bile Duct in Subacute and Chronic Jaundice: Report of Seventy-Three Cases with Hepatitis or Concomitant Biliary Duct Infection as Cause. A. A. Strauss, S. F. Strauss, A. H. Schwartz and others. Am. J. Surg. 97:137-140 (Feb.) 1959 [New York].

Surgical decompression of the common bile duct for relief of chronic jaundice resulting from acute and subacute hepatitis was performed on 73 patients. Of these, 31 had viral hepatitis, and 42 had subacute or chronic hepatitis due primarily to an infection of the common bile duct. A biliary fistula was formed by introducing a catheter into the hilus of the liver proximal to the atresia. For 1 or 2 days the fistula would yield only clear, watery fluid secreted from the ductal epithelium, showing that the liver cells could not function due to the increased intraductal pressure. When the pressure was relieved after 24 to 48 hours of decompression, the bile drained from the common bile duct assumed its normal color. All operations were performed with the aid of local anesthesia.

All patients with viral hepatitis had had jaundice for 9 weeks or longer and were in poor or critical condition; several were stuporous. Four of the 31 patients did not obtain relief of jaundice and died several months later. The other 27 patients completely recovered. Although these patients might have recovered without surgical drainage of the common bile duct, it is believed that the recovery rate in this series could not have been attained by medical therapy alone. All these patients had had an adequate trial period of medical treatment. In the group of 42 patients with an inflammatory process in the distal portion of the common bile duct and in the duodenal papilla, the ducts were thickened and infiltrated and contained a large amount of serous to seropurulent exudate. On probing the ducts, there was difficulty in passing through the papilla. Patients with this type of disease, as a rule, recover much more quickly from their jaundice and hepatitis than those who primarily have hepatitis. In some of the long-standing cases (3 to 6 months) the patients pass postopera-

tively into a phase of acute hepatitis that clinically resembles acute yellow atrophy of the liver. This happened in 2 of the 42 patients who died and in whom the autopsy finding was an acute necrosis of the liver with acute yellow atrophy. The other 40 patients recovered uneventfully.

GYNECOLOGY & OBSTETRICS

The Value of a Prepared Culture Medium in the Diagnosis of Trichomonas Vaginalis. W. H. Wolinska. Am. J. Obst. & Gynec. 77:306-308 (Feb.) 1959 [St. Louis].

The author employed 3 methods in searching for the presence of Trichomonas vaginalis in 203 consecutive patients from the special gynecologic service of the Strang Clinic at the Memorial Center for Cancer and Allied Diseases in New York. Fluid from the posterior vaginal fornix was obtained by means of two cotton-tipped applicators. One applicator was immersed in 1 cc. of warm isotonic sodium chloride solution for hanging-drop studies. The other applicator was immersed in 10 cc. of previously prepared culture medium. Routine cervical and vaginal smears on each patient were stained by the Papanicolaou method.

A trypticase culture medium was recently developed and is available as a prepared powdered medium known as Trichosel. It contains trypticase, cysteine hydrochloride, maltose, agar, methylene blue, and chloramphenicol. Twenty-three and six-tenths grams of this dehydrated material is dissolved in 950 cc. of distilled water, mixed thoroughly, heated, stirred, and boiled for about one minute. Nine and one-half cubic centimeters of the solution is dispensed into screw-top test tubes and autoclaved at 12-lb. pressure for about 15 minutes. Tubes are stored at room temperature. Just before it is used, 0.5 cc. of human serum, adjusted to pH 6, is added aseptically to each tube. Commercially available plasma, although having a pH of 7, may be used in lieu of serum. Cultures taken in the previously described manner do not require immediate incubation, but may be left at room temperature for several hours. Incubation overnight at 35 to 37 C is necessary to stimulate growth. The reading is done on wet smears in vitro. The recognition of Trichomonas organisms is based on the motility of the protozoa and the mobility of the undulating membrane. The presence of nonmotile organisms is not considered as a positive result. The highest number of motile parasites is usually found in cultures incubated 24 hours.

The other 2 methods, the hanging-drop technique and the cytological smear method, are also briefly outlined. Although these methods give a fairly accurate estimation of the presence of T. vaginalis, the Trichosel culture medium provides by far the most accurate method of detecting the presence of the parasite. The ease with which the vaginal secretion may be cultured under ordinary laboratory conditions renders this method eminently desirable for widespread use.

Transverse Vaginal Septum: Report of Three Cases with Method of Treatment. F. S. Rogers. M. Ann. District of Columbia 28:79-81 and 114 (Feb.) 1959 [Washington, D. C.].

Although there have been many reports about partial or complete absence of the vagina, the more common anomaly of transverse vaginal septum has received little notice. Clinically, transverse vaginal septum presents as a membrane of variable thickness, especially at its junction with the vaginal wall, where considerable fibrosis may be present. Openings are usually present in the septum and may be single or multiple, varying in size and location, but sufficient to allow for normal menstrual flow. The 3 patients presented here, ranging in age from 20 to 26 years, all had normal menses. One was married and complained of dyspareunia. All 3 patients were successfully treated by surgical excision and vaginal plastic procedure, but in each instance this was followed by the use of a vaginal dilator, designed to minimize scar formation and to prevent constriction of the operative area.

When excessive fibrosis is present, bleeding is difficult to control, proper approximation of the mucosal edges is often impossible, and there is the danger of cicatricial contracture. The author believes that the good therapeutic results obtained in the cases presented have been due in large measure to the proper use of the vaginal dilator postoperatively to prevent excessive scar formation and cicatricial contractures.

Diagnosis of Trichomonas Vaginalis Vaginitis. T. A. Burgh, C. W. Rees and L. Reardon. Am. J. Obst. & Gynec. 77:309-313 (Feb.) 1959 [St. Louis].

Studies were made on 1,848 female employees of the National Institutes of Health who participated in one or more of 3 annual vaginal cytology surveys. More detailed studies were made on 97 volunteers who were found to have trichomoniasis in the first survey or who were referred to the Trichomonas project because of vaginal discharge or itching. The patients were instructed not to douche or use vaginal medication for 24 to 48 hours before examination. The vaginal secretion for the Papanicolaou smear, wet smear, and culture was obtained by means of a glass pipette with a rubber bulb. For the Papanicolaou smear the secretion was expelled onto a glass slide, spread, and immersed immediately in equal parts of ether and absolute ethyl alcohol. The fixed smear was stained by Papanicolaou's method, and the slide examined. While the material for a wet smear is usually obtained by means of a cotton swab, in this study a small drop of vaginal secretion was expelled onto a dry glass

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slide (from the pipette used to make the Papanicolaou smear), a drop of isotonic sodium chloride solution added, and the preparation was then examined immediately for the presence of the characteristically motile trichomonads.

After these smears were prepared, the vaginal pipette was rinsed out in a tube of trypticase-liver-serum medium. The medium used in the culture studies was a combination of 2 nutrient fluids with the addition of horse serum, a reducing agent, and antibiotics. The composition of the culture medium is described, and the results obtained with it and the smear methods are compared. Diagnosis by means of the Papanicolaou smear was the least sensitive and specific method in that fewer than half of the patients from whom Trichomonas vaginalis was cultured were reported to have trichomoniasis. While the wet smear was the simplest, the culture method often demonstrated the infection when the wet smear was negative. The culture method was more convenient than the wet-smear method in that the microscopic examination did not have to be done immediately. It made little difference whether the patient had douched or recently used vaginal medication; if viable parasites were present, the culture method usually demonstrated them. Examination of vaginal cultures at 48 and 96 hours demonstrated nearly all cases of infection. About 8% of such cultures from infected women were negative, however. A single negative examination, therefore, should not rule out trichomoniasis in a woman with appropriate clinical findings.

The following procedure is recommended for the diagnosis of vaginal trichomoniasis: 1. Obtain a sample of vaginal secretion by means of either a cotton-tipped applicator or a vaginal pipette. 2. Inoculate the secretion into a tube of culture medium by inserting the applicator into the tube or rinsing out the pipette in the medium. 3. Add sodium thioglycollate and antibiotics. 4. Incubate the culture at 37 C and examine a drop of sediment for motile organisms with the compound microscope, preferably at 24-hour intervals but at least at 48 and 96 hours. 5. If a preliminary examination is desired when symptoms are acute, the material in the cotton-tipped applicator can be removed from the culture tube and used to prepare a wet smear. In a similar manner, a wet smear can be prepared from the pipette at the time of inoculation.

PEDIATRICS

Sex Reversal in Newborn Babies. K. L. Moore. Lancet 1:217-219 (Jan. 31) 1959 [London].

Sex reversal may be detected in the newborn infant by the sex-chromatin test. Oral smears were collected over a period of 12 months from 3,715 babies (1,911 males and 1,804 females) born at the Winnipeg General Hospital. The oral mucosa of the infants was scraped with a sterile nickel spatula, and the material deposited on a slide. Each smear was fixed immediately in equal parts of ether and 95% ethyl alcohol, the fixation extending overnight. The smears were stained with cresylecht violet. They were examined under the oil-immersion objective of a binocular microscope for the presence or absence of visible sex chromatin. The anatomic sex of the infant was unknown to the microscopist at the time of the examination. Infants with a chromosomal sex opposite to their anatomic sex were given a special examination.

All except 5 of the infants had a chromosomal sex consistent with their anatomic sex. The 5 exceptions were all anatomic males; they were normal-appearing infants but had sex-chromatin patterns typical of chromosomal females. The proportion of nuclei counted exhibiting female-sex chromatin ranged from 53 to 64%. These chromatin-positive males are regarded as exemplifying female-to-male sex reversal. The results of this investigation indicate that female-to-male sex reversal is commoner than male-to-female sex reversal, for no sex-reversed males were detected among the 1,804 anatomic females tested.

In commenting on the probable future development of chromatin-positive newborn males, the author mentions the possibility of testicular dysgenesis, of sterility or fertility, and of the possibility of the hereditary transmission of the chromatin-positive male characteristic. He suggests that the 5 chromatin-positive males in the present series will probably show normal sex development until puberty. Some will probably develop characteristics of testicular dysgenesis during adolescence, some may also become mentally abnormal, but others may become normal-appearing fertile males. The etiology of female-to-male sex reversal is also discussed. While early deficiency of primordial germ-cells in the gonads has been suggested as a causative factor for sex reversal in patients with testicular dysgenesis, the author suggests other possibilities, particularly the possible role of hormonal imbalance.

Aldrich's Syndrome (Thrombocytopenia, Eczema, and Infection in Infants): Studies of the Defense Mechanisms. W. Krivit and R. A. Good. A.M.A. J. Dis. Child. 97:137-153 (Feb.) 1959 [Chicago].

The authors report on 7 male infants, between the ages of 3 and 22 months, with Aldrich's syndrome, clinically manifested by rectal bleeding, petechiae, eczema, suppurative otitis, infections consisting of bronchopneumonia or abscess, and an abnormally depressed platelet count. In 4 of the 7 patients a positive familial history was obtained, which fulfilled the requirements for a sex-linked recessive trait by which the syndrome appears to be transmitted. The typical onset of melena in the neonatal period was noted in 5 of the 7 children. Persistent thrombocytopenia and normal

numbers and morphology of megakaryocytes were observed. Peripheral end-marrow eosinophilia was noted. The examinations of the bone marrow revealed a mild plasmacytosis and toxic changes among the neutrophils, but no other abnormalities. Nonspecific inflammatory changes were noted in the skin and lymph-node biopsy specimens. Autopsy in one patient and lymph-node biopsy in another revealed multiple thromboses of small arterioles. All the patients died despite cortisone and corticotropin therapy followed by splenectomy in one patient and despite multiple types of antiallergic therapy in the others.

Because of the frequency and severity of infections noted, an investigation of the defense mechanisms was made. This revealed no clear evidence of deficiency of the immune response to most antigens. The isoagglutinins were regularly absent in these patients. Gamma-globulin levels were normal or slightly elevated. Properdin levels were normal. Leukocyte function in the inflammatory reaction, migration, and phagocytosis were within normal limits. The causation of the thrombocytopenia was studied. No platelet agglutinins were noted. Normal production of platelets was apparent. The thrombocytopenia did not show any relation to the course of the eczema. A study of adrenal function revealed the presence of normal circulating plasma 17-hydroxycorticosteroids. Also, the response of 17-hydroxycorticosteroid levels to stimulation with corticotropin was normal. All attempts at treatment of the disease remained unsuccessful, though both adrenal steroid therapy and systemic treatment with estrogen and progesterone ameliorated the eczematoid processes.

Purpura Fulminans. S. E. Crawford and J. G. Riddler. A. M. A. J. Dis. Child. 97:198-201 (Feb.) 1959 [Chicago].

The authors report a 9-year-old girl who was admitted to the Jackson-Madison County General Hospital in Jackson, Tenn., because of purpura and ecchymotic areas over the lower extremities. Four hours after admission the patient went into severe hemorrhagic shock. Therapy consisted of intravenous administration of levarterenol bitartrate, whole blood, and hydrocortisone sodium succinate, in addition to massive doses of crystalline penicillin. Fifteen hundred cubic centimeters of whole blood was given slowly during the next 24 hours, and the patient's condition improved. On the second hospital day the bleeding time was 6 minutes, the platelet count was 40,000 per cubic millimeter, and the hemoglobin level was 15 Gm. per 100 cc. Three days later the bleeding time became normal; the platelet count reached 480,000, and after another 3 days it was 507,000. The skin of the lower extremities showed no advance of ecchymosis 12 hours after the institution of hydrocortisone therapy but these areas showed early slough and blister formation on the second hospital day. On the 14th hospital day the patient showed partial-thickness loss of skin over large areas of the left thigh, legs, and dorsum of the feet. A portion of all the toes of the right foot showed dry gangrene of the distal and inferior portions. There were scattered areas of full-thickness skin loss on the left thigh and the legs. The left leg and foot showed large areas of skin loss with dry gangrene of the distal half of the lateral 3 toes. The toes were allowed to heal and slough without excision. Complete healing of all the lesions had occurred 7 weeks after the onset of illness. The prompt and dramatic response of purpura fulminans in this patient far outweighs the very real danger of the use of adrenal cortical hormone in the presence of active infection. Survival in this usually fatal condition depends on early diagnosis and prompt adequate therapy.

Familial Addison's Disease: Case Reports of Two Sisters with Corticoid Deficiency Unassociated with Hypoaldosteronism. T. H. Shepard, B. H. Landing and D. G. Mason. A. M. A. J. Dis. Child. 97:154-162 (Feb.) 1959 [Chicago].

The authors report on 2 sisters in whom during their second year of life hyperpigmentation, weakness, and later convulsions occurred. One of the 2 patients died at the age of 30 months, and autopsy was performed. The clinical course of the other patient with a diagnosis of adrenal cortical hypofunction (Addison's disease), who is living, was followed from the age of 3 years to that of almost 5 years. Both patients were abnormally tall. The autopsy findings in the older sister corresponded closely with what would be expected in the younger sister according to clinical studies. These children did not have the classical form of Addison's disease in that the electrolyte-regulating mechanism of the adrenal cortex was functioning; aldosterone production was normal, although corticoid production was inadequate. In the younger patient, the serum protein-bound iodine level was slightly elevated. Neither of the 2 patients had any symptoms or signs suggesting secondary hypothyroidism.

In the patient who died, both the right and the left adrenal glands were difficult to identify on autopsy. Sections of the adrenal glands showed marked atrophy of cortical tissue. Only occasional clumps of cortical cells remained in the zona glomerulosa. All cells of the zona fasciculata and zona reticularis were absent. Autopsy also revealed the presence of the anterior pituitary in which the chief microscopic finding consisted of marked decrease of both basophil and acidophil cells. There was no evidence of any hypothalamic damage, either on autopsy in this patient or on clinical grounds in the other. The pituitary of the patient

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who died appeared to be responding to the state of adrenal insufficiency, suggesting that the initial endocrine defect lay in the adrenal glands rather than in the hypophysis; this concept was supported by the observation of the selective damage of the zona fasciculata and zona reticularis of the adrenal glands, perhaps due to a genetically determined metabolic disorder or to common exposure to an infectious or toxic agent. An alternative explanation is that the patients reported on shared a familial defect in anterior pituitary function, which resulted in a specific inability of the anterior pituitary basophil cells to secrete corticotropin (ACTH). The presence of mineral-corticoid activity in the absence of other corticoid activity is an unusual finding in patients with adrenal cortical hypofunction.

Bronchogenic Cysts in Infants and Children. J. W. Herrmann, T. C. Jewett Jr. and G. Galletti. J. Thoracic Surg. 37:242-250 (Feb.) 1959. [St. Louis].

Seven boys and 5 girls with congenital bronchogenic cysts were operated on in the surgical department of the Children's Hospital in Buffalo, N. Y. Of these 12 patients, 4, between the ages of 1 day and 2 months, had expanding pulmonary cysts and were admitted as either acute or subacute respiratory emergencies. All 4 patients had a history of rapid and progressive cyanosis and dyspnea. The pertinent physical findings were hyperresonance, decreased breath sounds, and evidence of mediastinal shift as noted by the position of the apical heart beat. Chest roentgenograms revealed single or multiple well-circumscribed, thin-walled cystic structures which were occupying part or all of one hemithorax. The cysts partially or completely compressed the adjacent lung parenchyma. Other confirmatory signs which indicated the expanding nature of the cyst were depression of the hemidiaphragm and widening of the interspaces on the involved side. Two of the 4 patients had lobectomies and one had a pneumonectomy, with uneventful postoperative courses. The 4th infant underwent laparotomy because of an erroneous roentgenologic diagnosis of diaphragmatic hernia; the patient died suddenly before thoracotomy could be performed. Pathological examination of the resected specimens revealed single or multiple cysts lying within the lung parenchyma with surrounding atelectasis. On cross section, they had a smooth, pale, glistening surface with a glary type of mucus on the wall. Some were crossed by fine trabeculae, whereas others were multiloculated. A bronchial communication was usually demonstrable. Inflammation was not prominent.

The remaining 8 patients, between the ages of 6 months and 9 years, had secondarily infected pulmonary cysts occurring as a result of bacterial invasion of a previously sterile cyst. These children had a classical clinical history of intermittent respiratory infections with asymptomatic intervals. The first attacks were usually interpreted as bronchitis or pneumonia. After several such attacks, chest roentgenograms established the correct diagnosis. The commonest symptoms and signs in these patients during the acute stage of their disease were those of pulmonary suppuration, namely, fever, dyspnea, cough, and purulent sputum. The roentgenographic picture of the secondarily infected cysts differed from that of the expanding cysts in that there was little evidence of compression of surrounding structures. The cysts appeared extremely round, smoothly outlined, and thin-walled with varying degrees of pneumonitis and frequent evidence of fluid levels. Three of the 8 children underwent pneumonectomy, 4 underwent lobectomy, and 1 had marsupialization and subsequent thoracoplasty performed. One patient who had several attacks of cardiac arrest during pneumonectomy died shortly after the operation, and another patient died on the operating table during right middle lobectomy. Both deaths were attributable to massive flooding of the contralateral lung by infected material from the cysts, and would be preventable today by proper preoperative preparation with antibiotics, postural drainage, and bronchoscopy. Pathological examination of the surgical specimens revealed a definite predilection for these cysts to occupy the lower lobes. Their gross appearance was similar to that of the expanding cysts, but infection supplanted the signs of compression of neighboring pulmonary tissue. On cross section, the bronchial-type mucosa had a glistening appearance. The cavity itself usually contained purulent exudate, and there was evidence of pneumonitis in the surrounding parenchyma.

Congenital pulmonary cysts may be divided into 2 major groups based on either of 2 presenting symptom complexes associated with expansion or infection. Expanding pulmonary cysts are usually found in newborn infants; since they may run a rapidly fulminating course, prompt diagnosis and surgical intervention are mandatory. Infected pulmonary cysts occur in older children and usually require a more protracted period for accurate diagnosis and adequate preoperative preparation. The treatment of choice in both types of congenital pulmonary cysts is by resection of the involved pulmonary parenchyma.

Rubella and Incidence of Congenital Abnormalities. V. P. Coffey and W. J. Jessop. Irish J. M. Sc. 6:1-11 (Jan.) 1959 [Dublin].

The authors present a survey of the outcome of pregnancies in mothers who either contracted or were in contact with rubella during the Dublin epidemic in 1956. Seventy-five patients who had been attending the antenatal outpatient departments of the 3 Dublin maternity hospitals and St.

Kevin's Hospital, Dublin, were found to have had contact with rubella or had had rubella. The condition of the babies at birth was noted, and 3 months after birth they were examined again in an effort to detect congenital abnormalities, such as lesions of the cardiovascular system or deafness, which would not have been obvious at birth. Forty-nine of the 75 patients had only had contacts. Five of the 75 patients gave birth to infants with congenital abnormalities, giving a rate of 67 per 1,000 as compared with 16 per 1,000 in a previous survey conducted in Dublin maternity hospitals between 1953 and 1954, when rubella was not epidemic. Infected mothers had a higher percentage of congenitally deformed children than had those who were only contacts of the disease. Mothers who contracted the infection during the first trimester of pregnancy had a higher percentage of congenitally deformed children than had those who contracted rubella during the last 6 months. There was no such trend in the incidence of congenital abnormalities among infants born to mothers who were exposed to rubella but did not contract the disease.

Gamma globulin had been given to 2 mothers who had contact with rubella within the first 2 months of pregnancy, and both had normal babies. No relationship could be found between incidence and sex of the baby in either infected or exposed mothers. As regards weight of the babies at delivery, a higher proportion of the children of mothers who actually had the disease were below normal weight at birth than were those of mothers who were only contacts of the infection. It is suggested that girls be encouraged to become contacts of rubella with a view to contracting the disease before marriage, that the pregnant woman who has not had rubella avoid contact with the infection during pregnapcy, and that, if such a woman becomes a contact, the development of the infection be prevented by administration of immune serum or gamma globulin.

On the Use of Cortisone Preparations in Hemolytic Disease of Newborn Infants Due to Isoimmunization in the ABO System (Effect of Cortisone Preparations on Bilirubinemia). G. Murano and E. Barbagallo. Pediatria 66:869-901 (Nov.-Dec.) 1958 (In Italian) [Naples].

Two newborn infants with hemolytic disease due to maternal immunization were treated with cortisone preparations. The values of bilirubin in blood taken 12 hours after birth were 14.4 mg. per 100 cc. in the first child and 13.5 mg. per 100 cc. in the second. The first child was given 20 mg. of prednisone per day for 10 days and 5 mg. per day for the following 10 days. A marked improvement in its general condition was already present by the 12th day of treatment when the concentration of bilirubin had dropped to 3.8 mg. per 100 cc. Seven months later the infant was seen again and was found to be in good general condition. There were no clinical signs of encephalic involvement, and development had been normal. The second child was given 15 mg. of prednisone per day for the first 10 days and 5 mg. per day for the following 10 days. The general condition of the infant had improved markedly by the 10th day of treatment, the concentration of bilirubin having dropped to 3.2 mg. per 100 cc. When the child was seen again after 7 months, it was found to be in good general condition, and its development had been normal. The prednisone therapy had had a good effect, especially on the indirect bilirubin values in both children. The authors believe that cortisone preparations not only check the hemolytic disorder but also stimulate the enzymatic activity of the liver.

The Natural Clinical History of Choreo-Athetoid "Cerebral Palsy." P. E. Polani. Guy's Hosp. Rep. 108:32-45 (no. 1) 1959 [London].

An attempt was made to obtain a clearer clinical picture of the sequence of neurological events in choreoathetoid cerebral palsy, a form of cerebral palsy characterized by the presence of athetosis, chorea, or a mixture of these 2 conditions with unwanted movements that are more difficult to define and describe. Seventy-three children (39 girls and 34 boys) with this form of the disease were studied. Fifty-five of the children were first seen before the age of 5 years, 29 before the age of 1½ years, and all 73 before the age of 10 years. When last seen, 52 were more or less ambulant, and 21 were nonambulant. All patients had unwanted movements which in most of the patients were present at rest; in the remainder these movements appeared only in response to an attempt to move or in association with emotional tension. In 6 patients some muscle groups showed spastic hypertonia. Intermittent hypertonia was present in 14 patients. The tone appeared normal in 8 patients when they were fully relaxed, and in an additional 8 the tone was thought to be decreased. The remaining 37 patients had definite hypotonia when they were fully relaxed. Twelve of the 73 patients had paralysis of voluntary upward conjugate eye movements, and 28 had severe but not total loss of hearing.

Etiologically the 73 patients were subdivided into 3 groups. Twenty-two had a history of severe neonatal jaundice due to Rh isoimmunization, 16 had had severe neonatal jaundice without evidence of blood group incompatibility between mother and infant, and the remaining 35 patients had no history of severe neonatal jaundice, but a history of various complications of delivery and neonatal condition. A history of disturbance of pregnancy, such as toxemia or nontoxic separation of the placenta, was elicited in 2 of the 16 patients in the second group. The incidence of prematurity was highest in the

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second group in whom jaundice had been found without evidence of blood group isoimmunization. In the third group without jaundice, one-third were premature, one-quarter were born through breech delivery, and three-quarters had clinical asphyxia in the perinatal period. The patients in the first group with kernicterus due to immunization had the most stormy neonatal period, with twitching and opisthotonos. All the patients without neonatal jaundice had a history of sucking or swallowing difficulty from the start, and a substantial number of these patients had neonatal fits, cyanotic attacks, and frequent vomiting.

The neonatal symptoms in the 73 patients had commonly disappeared by the end of the second week of life, so that between the ages of 2 weeks and the end of the first or second month of life there was generally a silent period except for common difficulty in feeding and respiratory stridor. After the second month of life the presence of a neurological disturbance became evident in 9 out of 10 patients, and nearly all showed delayed development to a greater or less extent. Thirty-seven patients had opisthotonic attacks, 25 had hypertonia, and 3 had striking hypotonia. At the end of the first year 23 had marked hypotonia. Of 56 patients in whom the onset of unwanted movements could be reasonably accurately timed, these appeared before the age of 2½ years in 39 and between 3 and 3½ years in the remaining 17.

These data show that in about 50% of the patients with this type of cerebral palsy there is a strong link with a clear-cut causative factor (severe neonatal jaundice), while in the other 50% interference with normal oxygenation in the perinatal period seems to be causatively involved. It appears that much more prospective work by individual observers is necessary if the clinical problems posed by the natural history of the various forms of cerebral palsy are to be solved. Preferably, the clinical examination should be conducted before obtaining a history.

Acute Gastro-Enteritis in Infants and Young Children with Special Reference to Some Etiological Factors (Analysis of 665 Cases). S. S. Manchanda and N. N. Arora. Indian J. Pediat. 25:599-607 (Nov.) 1958 (In English) [Calcutta].

Of 4,438 children admitted to the department of pediatrics of a hospital in Amritsar, India, between July, 1955, and December, 1957, 665 (450 boys and 215 girls) had acute gastroenteritis. This high incidence of acute gastroenteritis (15%) is not surprising with the present low state of sanitation and ignorance about food hygiene in the province of the Punjab. Five hundred fifteen (77.4%) of the 665 children were between the ages of 1 and 12 months, 113 were between the ages of 13 and 48 months, and 37 were over 48 months of age. Of the 665 children, 109 (16.4%) died; 79 of these were less than one year old. Three hundred ninety-seven (59.7%) of the 665 children were admitted during the summer months (May, June, and July), as compared with only 268 children admitted during the remaining 9 months. There was a mortality rate of 21.3% among the bottle-fed infants, as compared with a mortality rate of 9.18% among the breast-fed infants.

Although breast feeding is not unpopular in the Punjab, breast feeding is supplemented by bottle feeding in 70 to 75% of the infants, buffalo milk diluted with water and modified with various aromatics often being used. The early introduction of a milk rich in fat caused diarrhea. Poor housing conditions and the lack of proper lavatory arrangements also contributed to the occurrence of gastroenteritis. Eighty-four strains of various bacteria were isolated from 60 diarrheal stools studied bacteriologically. In most of the cases several pathogenic organisms were isolated from the culture of the fecal specimens. Serologic types of Escherichia coli were isolated from 30% of the total specimens, Paracolobactrum organisms from 31.6%, Staphylococcus pyogenes var. aureus from 21.6%, Streptococcus faecalis from 21%, Proteus organisms from 20%, Pseudomonas aeruginosa from 13.3%, and Shigella flexneri from 1.2%.

The causation of diarrhea among these Indian children thus involved several environmental factors, such as feeding, atmospheric humidity, seasonal incidence, social status, and food hygiene; in many instances a bacterial pathogenic agent was recognizable. The highest incidence was observed among bottle-fed infants during summer. Other gram-negative bacilli and gram-positive cocci than the serologic types of Esch. coli seem to be important in the causation of gastroenteritis.

Diagnostic Value of the Determination of Serum Aldolase in Epidemic Hepatitis in Children. M. Leonescu, N. Cajal, V. Boeru and others. Rumân. M. Rev. 2:44-47 (July-Sept.) 1958 (In English) [Bucharest, Romania].

Aldolase levels were determined in the serums obtained from 61 children, between the ages of 16 months and 10 years, admitted with epidemic hepatitis to a children's hospital for infectious diseases in Romania in 1956 and 1957. Jaundice was present in 38 patients and was absent in 23. Serum aldolase values were determined also in 25 normal persons, in 33 patients with miscellaneous noninfectious diseases, in 7 adult contacts of children with epidemic hepatitis, in 2 children with measles, and in 4 children with epidemic parotitis. The adolase activity in normal persons varied from 4 to 20.3 units and averaged 9.7 units. The aldolase activity in the patients with noninfectious diseases averaged 12.1 units. The mean values of aldolase were 19.4 units

in the children with measles and 24.5 units in those with epidemic parotitis. In the adult contacts of children with epidemic hepatitis, the mean aldolase value was 18.3 units.

In the 38 children with epidemic hepatitis associated with jaundice, the average serum aldolase values were 75.4 units during the first week, 46.8 units during the second week, 32.6 units during the third week, and 17 units during the fourth week. The average aldolase values in the 23 children with epidemic hepatitis not associated with icterus were 85.3 units during the first week, 41.1 units during the second week, 23.7 units during the third week, and 20.1 units during the fourth week. The over-all average value of the 23 determinations of serum aldolase in these patients was 52.1 units.

None of the patients with positive results from dysproteinemia tests had normal serum aldolase values. There were 5 children with increased serum aldolase values who had normal results from dysproteinemia tests and who had no bile pigments in the urine. The urobilinogen test revealed normal values in 4 of these 5 patients and slightly increased values in 1. The diagnosis of epidemic hepatitis in these 5 patients was made on the basis of epidemiologic and clinical features and was confirmed by the increased serum aldolase level. The maximum value of serum aldolase found in the determinations made in the 61 children with epidemic hepatitis was 146.1 units, i. e., almost 15 times the normal value, but an increase in aldolase level to 2 to 8 times its normal value (as determined by other workers) is to be considered as a pathological increase. Discrepancies in results may, in fact, be due to the different techniques employed.

According to most workers the serum aldolase level reaches its peak during the first week of the disease, with a subsequent decrease during convalescence. Though nonspecific, the increase in the serum aldolase level is a far more reliable laboratory aid in the diagnosis of epidemic hepatitis than the dysproteinemia tests. The results obtained in the children with nonicteric epidemic hepatitis justify the use of the determination of the serum aldolase level on a larger scale in the diagnosis and differential diagnosis of nonicteric epidemic hepatitis. The study of the serum aldolase level in contacts of patients with epidemic hepatitis may be of aid in the diagnosis of subclinical infections, thus acquiring a prophylactic and epidemiologic value as well.

Scrofula Caused by Atypical Mycobacteria. J. S. Chapman and L. R. Guy. Pediatrics 23:323-331 (Feb.) 1959 [Springfield, Ill.].

Several recent reports on human infection by atypical mycobacteria referred to disease of cervical lymph nodes in young children. The authors present the histories of 6 children with scrofula caused by atypical mycobacteria. The children ranged in age from 20 months to 5 years. The lymph nodes removed for biopsy or aspirated pus were inoculated into various mediums. Colonies were exposed to various lights, were subcultured, and were tested for drug susceptibility, with the neutral red test, and for catalase production. All strains were injected into the groins of guinea pigs and intravenously into rabbits. In addition to the studies of lymph node tissue or pus from scrofulous children, swabs were made from the tonsillar crypts or pharynges of 43 apparently healthy children referred to the clinic for Mantoux tests. The organisms removed from the enlarged nodes or from aspirated pus differed considerably among themselves, were clearly distinguishable from Mycobacterium tuberculosis, but resembled, or were identical with, those recovered from swabs of tonsils or pharynges of healthy children. It is not possible to regard all these organisms as belonging to the same strain; they belonged to the general group of chromogenic mycobacteria.

A summarization of the histories of the 6 children provides several points of clinical differentiation from true tuberculous scrofula. These children did not originate from tuberculous families, as shown by roentgenologic examination of the parents and the negative Mantoux tests of the siblings. The infected children themselves had weak or negative reactions to tuberculin. The enlarged nodes were not associated with mediastinal adenopathy, bronchial obstruction, disease of bone, or other lesions. The onset of the infection was usually rapid and was sometimes associated with rather high fever, perhaps resulting from pharyngitis. The cervical nodes underwent rapid enlargement and early suppuration. The disease remained localized to the submandibular group, as opposed to scrofula caused by Myco. tuberculosis of the human type; the latter involves several groups of lymph nodes, progresses slowly, produces comparatively less enlargement and much less suppuration of nodes, is associated with contacts, and is nearly always an incidental finding in the course of a progressive primary infection with marked tuberculin sensitivity. This disease seems to be due to invasion by chance of the deeper structures by oropharyngeal contaminants, perhaps preceded by ordinary infections in the oropharynx. No evidence points to person-to-person transmission.

Maple Syrup Disease: Isolation and Identification of Organic Acids in the Urine. J. H. Menkes. Pediatrics 23:348-353 (Feb.) 1959 [Springfield, Ill.]

When the author and his associates in 1954 reported 4 cases of a familial cerebrodegenerative disease, characterized by the excretion of urine with a maple sirup-like odor, they were unable to determine the nature of the substance responsible for the urinary odor. Since then, 6 additional cases

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of the syndrome, occurring in 3 unrelated families, have been brought to their attention. The disease in all these children was characterized by early onset of spasticity and myoclonic seizures with rapid progression to decerebrate rigidity. Death ensued between 15 days and 20 months of age. The author obtained urine samples excreted by one of these children during the last months of life. These urine samples contained large amounts of alpha-ketoisocaproic acid, the keto analogue of leucine, together with smaller quantities of the keto acids of valine (alpha-ketoisovaleric acid), and isoleucine (alpha-keto-beta-methyl-n-valeric acid). These substances may indirectly be responsible for the unusual urinary odor.

The presence of large quantities of keto acids in the urine represents a distinctly abnormal phenomenon. The presence of several keto acids in association with a severe cerebrodegenerative disease suggests that these 2 findings are causally related and recalls the findings in phenylketonuria. In the latter condition, the urine has a peculiar "mousy" odor, probably caused by the presence of phenylacetic acid. The author discusses several possibilities that may account for the accumulation of alpha-keto acids in the urine. He believes that a failure of the transamination reaction or a failure in the excretion or utilization of amino acids can be excluded, but that an impairment of the degradative metabolism of the branched-chain amino acids may be an important cause of the cerebral degeneration in maple sirup disease.

DERMATOLOGY

Relaxin (Releasin) Therapy in Diffuse Progressive Scleroderma: A Preliminary Report. J. A. Evans. A. M. A. Arch. Dermat. 79:150-158 (Feb.) 1959 [Chicago].

The author reports on 9 women and 2 men, between the ages of 19 and 55 years, with scleroderma who had undergone sympathectomy and were treated with relaxin (Releasin), a polypeptide-like hormone obtained from the ovaries of pregnant sows. Scleroderma was especially severe in the hands and face. All but one patient had Reynaud's phenomenon. Nine of the 11 patients had esophageal involvement, 6 had pulmonary scleroderma, 1 had gastric scleroderma, 1 had intestinal scleroderma, and 4 had laryngeal involvement and were hoarse. Seven patients received relaxin intravenously for 3 to 7 days in increasing doses varying from 2.5 to 80 mg. in 5% dextrose and isotonic sodium chloride solution. After preliminary intravenous administration, a gel preparation was given intramuscularly in doses ranging from 30 to 50 mg. 2 to 7 times a week. Four patients subsequently received rectal suppositories containing 40 mg., taken each night. All patients were primed with diethylstilbestrol in doses of 1 mg. daily, and this was continued throughout therapy. Duration of treatment ranged from 7 to 23 months.

Relaxin helps to loosen the skin of patients with scleroderma. Sympathectomy combined with relaxin and diethylstilbestrol therapy brought greater flexibility of the skin in 8 of the 11 patients, being most effective in the face, neck, upper and lower arms, chest, abdomen, and legs. The hands showed a little improvement, such as healing of ulcers or erosions, but finger mobility was rarely improved. Relaxin seems to have a better effect in sympathectomized areas of the skin. In 2 patients who had received relaxin before sympathectomy, the skin showed no definite improvement, but in 3 patients who received relaxin immediately after sympathectomy, the skin of one was notably improved; the second patient showed improvement in the unsympathectomized facial, cervical, and arm skin but only slight improvement, as yet, in the sympathectomized area of the leg with an ulcer; the third patient died after treatment was started. Further loosening of the skin resulted in 4 of 6 patients in whom relaxin therapy was begun 4 months to 4¾ years after sympathectomy when improvement had reached a plateau.

One patient with severe pulmonary scleroderma was twice saved from acute pulmonary decompensation by vigorous therapy with relaxin given intravenously. Notable improvement of the voice occurred in 2 patients with laryngeal involvement, one of these being able to sing again. In one patient leg ulcers, which had been present for 23 years and persisted after lumbar sympathectomy, finally healed on relaxin therapy. In another patient with a leg ulcer, who had undergone only a thoracic sympathectomy, the ulcer healed in 2 months on relaxin suppositories when desultory therapy with intramuscular injections had failed. Improvement of dysphagia was notable in 4 of the 9 patients with esophageal scleroderma; 8 of the 9 patients in whom scleroderma of the esophagus had been revealed by x-ray examination still showed evidence of the disease by barium swallow. Three of the 11 patients died: one died of esophageal involvement; one with intestinal involvement died of unknown cause; and one died of an anaphylactoid reaction after intravenous administration of relaxin.

Pseudohypoparathyroidism: The Seabright Bantam Syndrome. C. W. Laymon and A. Zelickson. A. M. A. Arch. Dermat. 79:194-201 (Feb.) 1959 [Chicago].

Pseudohypoparathyroidism is a rare disease characterized by tetany and convulsions, low serum calcium level with elevation of serum phosphorus level, symmetrical obesity with round full facies, stubby fingers, acalcification of dental roots, and mental retardation in some patients. There is a

failure of the appearance of phosphorus diuresis after the intravenous administration of parathyroid extract. Pseudohypoparathyroidism has the same symptomatology, chemical findings, and physical signs as hypoparathyroidism, but the cause of the disturbance is a resistance to, rather than a lack of, parathyroid hormone. It seems likely that there is an end-organ (kidney) failure to respond to parathyroid hormone, which results in the chemical aberrations in the blood of patients with pseudohypoparathyroidism.

The skin is not especially helpful in diagnosis of pseudohypoparathyroidism, since there are no constant or pathognomonic cutaneous lesions. In most cases collected from the literature, the skin was not mentioned. In some patients whose cases were reported by other workers, there was cutaneous dryness and coarseness, facial hypertrichosis, thinning of the fingernails, sparseness of hair on the scalp, face, and axillas, and scaly lesions at the angles of the mouth. Flushing of the face was mentioned in one case. The authors report on a 2½-year-old girl with pseudohypoparathyroidsim who had lichenified plaques on the face and neck simulating seborrheic dermatitis and lesions on the scalp which resembled psoriasis. The entire skin of the patient was dry and scaly, resembling ichthyosis. Microscopic examination of a dry scaly plaque on the right forearm showed moderate hyperkeratosis of the epidermis. There were scattered islands of parakeratosis and accumulations of inflammatory infiltrate in the papillary portion of the cutis. The primary disease of the patient was steatorrhea. Although the cause of pseudohypoparathyroidism is unknown, it seems to be hereditary rather than acquired. Steatorrhea may play a role in some cases.

Laboratory Studies in a Series of Biologic False-Positive Reactors. J. L. Miller, M. Brodey and J. H. Hill. A. M. A. Arch. Dermat. 79:208-212 (Feb.) 1959 [Chicago].

The authors report on 79 patients, between the ages of 23 and 82 years, most of whom were from the dermatological department of the Vanderbilt Clinic in New York but some were seen in private practice. All the patients had a biological false-positive reaction to one or more of the standard tests for syphilis and were subjected to a variety of laboratory tests, one or more of which showed abnormality in 57 of them. The 79 patients were divided into 2 groups. Sixty-seven patients (15 men and 52 women) showed no clinical evidence of disease, except for the finding of a biological false-positive reaction to the standard tests for syphilis, with a known mean duration of this reaction for 5 years; 47 of these showed abnormalities in the laboratory tests done. Twelve patients (1 man and 11 women), with a biological false-positive reaction of mean duration for 3 years, had clinical evidence of systemic disease. The diagnoses made in these 12 patients included rheumatoid arthritis, Laennec's cirrhosis, congenital hemolytic anemia, cryoglobulinemia, cerebral vascular accident, systemic lupus erythematosus, diabetes mellitus, brain tumor, migratory polyarthritis, convulsive disorder, and generalized lymphadenopathy. Ten of these 12 patients had positive results of the laboratory tests to which they were subjected. The second group of patients listed as systemic, in contrast to the first group listed as nonsystemic, thus had a higher proportion of positive results of the laboratory tests.

The laboratory tests, in the order named, were those showing the highest incidence of abnormality: serum electrophoretic pattern (showing a wide variation in the type of derangement in the serum protein level), cephalin flocculation, thymol turbidity, erythrocyte sedimentation rate, and complete blood cell count. The performance of these tests is advocated in patients with biological false-positive reactions to one or more of the standard tests for syphilis. The diagnosis of biological false-positive reaction is always of serious significance. It is commoner and of more concern especially in young women because of the higher incidence of systemic lupus erythematosus in this group. Despite the serious significance of a biological false-positive reaction, many of the patients with this finding exhibited no apparent ill-effects over many years. These variations are present in many chronic diseases. Alertness to the potentialities, careful observation, and laboratory studies are at present the best means of defense.

UROLOGY

Perirenal (Gerota's) Fascitis. J. A. Hutch, R. C. Atkinson and G. S. Loquvam. J. Urol. 81:76-95 (Jan.) 1959 [Baltimore].

Sudden complete anuria due to compression of both ureters by a dense, grayish-white mat of fibrous connective tissue, which also involves the abdominal aorta and inferior vena cava, was described by Ormond in 2 patients in 1948. Since then 19 similar cases have been described in the literature, and in this paper the authors present 2 new cases and a 5-year follow-up on one of the previously reported patients. They emphasize that this urologic entity should be distinguished from periureteritis plastica; it is an inflammatory disease confined within the perirenal (Gerota's) fascia. The first of their 2 patients died 4 days after admission to hospital. The second patient was operated on and survived. Anuria is the cardinal symptom. In 8 of the 23 patients complete anuria developed suddenly, and in 2 others oliguria developed. The remaining patients probably would have become anuric but for the surgical intervention. During the preanuric phase the urologic nature may not be

recognized. Several patients were first investigated on the orthopedic, neurological, medical, or surgical services before the urologic aspects became evident. The clinical pattern is that of chronic, rather than acute, disease. A palpable mass over the sacral promontory is pathognomonic, but it was noted in only 2 of 23 cases. The authors believe, however, that, as this disease becomes better known, urologists will be able to palpate this mass more frequently. In roentgenologic visualization of the upper urinary tract, the segment of the ureter involved in the plaque lies medial to the normal position.

Previous pathological studies on small bits of plaque obtained by biopsy revealed dense, fibrous connective tissue with some fat and inflammatory cells. Autopsy studies on the fatal case presented here revealed a plaque-like mass of dense, grayish-white fibrous connective tissue that extended superiorly from a level just below the sacral promontory for 14 cm. It was 6 cm. in width at its widest point and 3 cm. in thickness at its thickest point. This plaque completely surrounded the aorta and both ureters and incompletely surrounded the inferior vena cava. The ureters seemed to be pulled medially, and their lumens were obliterated by compression. The peritoneum was densely adherent to the plaque. In addition, several loops of the small intestine adhered to the peritoneum over the plaque at the level of the sacral promontory. Multiple microscopic sections revealed that this is a benign process.

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Treatment may furnish a clue to diagnosis, since in 6 of 7 patients, in whom anuria was treated by bilateral ureteral catheterization, the disease recurred when the catheters were withdrawn. The patients improved and the uremia diminished as long as the ureteral catheters were in place and draining well. Once the diagnosis has been established, the safest procedure is to institute nephrostomy drainage immediately. The surgical attack on the obstructing tissue may be handled in several ways. In some cases the transperitoneal approach is used. The second operative approach is the standard retroperitoneal incision. The problem of freeing the ureter varies, and after it has been solved, further contact between the ureter and the plaque must be prevented. The ureter has been sutured to the peritoneum or psoas muscle with an absorbable (catgut) suture. It is also possible to sew the peritoneum or the perirenal (Gerota's) fascia to the psoas in such a way that the ureter is deprived of any further contact with the scar tissue plaque. Unfortunately, even after the ureter has been freed, hard fibrotic areas still remain. The results of treatment leave much to be desired in that 4 of the 23 patients have died, and, of the remaining 19 alive when last seen, 7 had lost one kidney and several had residual damage in the remaining kidney.

Discussing the differential diagnosis between perirenal fascitis and periureteritis plastica, the authors point out that in the 4 patients with the latter condition described by Vest and Barelare Jr. the disorder was unilateral, whereas in all 23 of the cases reviewed here it was bilateral. Furthermore, in the cases of Vest and Barelare Jr. the ureters were in their normal positions, whereas in perirenal fascitis the ureters lay medial to their normal positions. In periureteritis plastica the ureter was attached to the lumbar muscles rather than being pulled medially against the vertebral bodies or vena cava or aorta. Although these 2 diseases have some features in common (compression of the ureter by periureteral inflammation and a similar histological pattern of the periureteral tissue) and may be related, the authors believe that they are separate entities.

Unilateral Multicystic Kidney: Report of 6 Cases and Discussion of the Literature. M. G. Fine and E. Burns. J. Urol. 81:42-48 (Jan.) 1959 [Baltimore].

Unilateral multicystic kidney is a congenital disorder, resulting from fetal maldevelopment, in which an irregularly lobulated mass of cysts of varying size completely replace the renal tissue. Many other terms have been applied to this disorder, but the authors are of the opinion that "unilateral multicystic kidney" describes this defect most accurately. When they encountered 2 infants with this disorder within a period of a few weeks, they reviewed the literature and searched the records of Charity Hospital of Louisiana, New Orleans, for the past 20 years for similar cases. They were able to find only 48 antomically proved cases in the literature. In addition to the 2 aforementioned infants, they found 4 others whose cases were recorded at Charity Hospital. The histories of these 6 infants are described. Of the 19 males and 29 females whose cases were collected from the literature, 32 were infants or children. Calcification was present in 14 patients, almost all adults, 2 of whom had osseous changes. Cartilage was found in the specimens of 3 children. In 43 cases a definite ureteral abnormality varying from complete absence to stenosis was present. In 6 cases congenital anomalies of other organs were present.

No entirely satisfactory etiological explanation for this nonhereditary congenital defect has been offered. In gross appearance the unilateral multicystic kidney has been likened to a bunch of grapes. Microscopically, the cysts are lined with a single layer of flattened or cuboidal epithelial cells, and the walls are composed of fibrous tissue sometimes with hyaline or calcific changes. These cystic kidneys may cause no symptoms. Usually a unilateral, lobulated, nontender, movable mass is palpated in the flank or abdomen of an otherwise healthy infant. Pressure on the adjacent intestines sometimes

causes gastrointestinal symptoms. Pain, fever, hematuria, pyuria, and hypertension are rare. The presence of a lobulated unilateral renal mass in an infant or child with no demonstrable renal function and the absence or blind termination of the ureter on the affected side with an apparently normal functioning kidney on the opposite side should suggest the diagnosis. The prognosis following nephrectomy is good.

The Dissolution of Renal Phosphatic Calculi by Retrograde Irrigation. J. S. Elliot, J. P. Adamson and L. Lewis. J. Urol. 81:56-60 (Jan.) 1959 [Baltimore].

Elliot and associates report their experience with the dissolution of renal phosphatic calculi in 9 patients, 8 of whom were young adults severely paralyzed by poliomyelitis. They resorted to the use of citric acid solution, after they had found that Versene solution caused too much discomfort. The use of citric acid solution to dissolve phosphatic calculi was first reported by Albright, Sulkowitch, and Chute in 1939. These authors also showed that calcium oxalate calculi were insoluble in citric acid and suggested means whereby the composition of a stone might be inferred from the clinical findings and x-ray pattern. A solution less irritating than the original and containing magnesium was later described by Suby, Suby, and Albright. Since citric acid readily supports bacterial growth, the authors modified the solution described by Suby, Suby, and Albright by the addition of sodium benzoate in a concentration of 0.1%.

The irrigation is carried out with 2 polyethylene whistle-tip ureteral catheters, a size 5F and a size 7F or 8F. These are passed cystoscopically up to the involved renal pelvis. The eyes of the catheters are placed as nearly as possible in the midpoint of the renal pelvis. The smaller catheter is used for in flow, and the larger for outflow. The solution is run into the inflow catheter by continuous gravity drip at a rate of about 1 to 2 drops per second, and the outflow catheter is connected to gravity drainage by polyethylene tubing. The irrigation is continued day and night until dissolution is accomplished, or the procedure is terminated for other reasons.

In 2 patients rather large aggregates of renal calculi were completely dissolved, as were a number of recurrent calculi in a third patient. Chronic urinary infection which had been resistant to treatment responded to antimicrobials after dissolution of the calculi. In 5 other patients a marked reduction in the amount of calculous material was seen on x-ray examination. The calculi which underwent complete dissolution consisted of multiple small spherules, and all were known to have been present for less than one year. The calculi in one patient which were unaffected by the treatment were known to have been present for more than 3 years. Complete dissolution seems to be most feasible in the patient with multiple small calculi of relatively recent origin. The large staghorn calculus is less suitable for this type of treatment in view of the extended hospitalization required and the technical difficulties and complications which may be encountered. The citric acid irrigation treatment appears to be a reasonably safe procedure, provided that close nursing supervision is available. Unlike renal surgery, it may be repeated any number of times without increased technical difficulties.

The Management of Cystinuria and Cystine-Stone Disease. D. R. Smith, F. O. Kolb and H. A. Harper. J. Urol. 81:61-71 (Jan.) 1959 [Baltimore].

In contrast to the older concept that cystinuria is due to an "inborn error of metabolism," it is now generally believed that in patients with cystinuria the renal tubule is congenitally defective, insofar as the reabsorption of cystine, lysine, arginine, and ornithine is concerned. Since cystine is insoluble at the normal pH ranges of urine, formation of stones can occur, and then cystinuria becomes clinically important. Any patient who has passed renal stones in childhood, who has many recurrences, or who has a family history of renal stones should be investigated for cystinuria. All relatives of a patient with cystinuria should also be screened. The disorder is inherited as a recessive trait. One of the patients observed by the authors had 11 relatives with cystinuria. Only those with strongly positive tests, however, are likely candidates for stone formation and must be watched. The presence of typical hexagonal cystine crystals is diagnostic of cystinuria. These crystals are often difficult to find in dilute or alkaline urine. If glacial acetic acid is added and the urine is allowed to stand in a wide-bottomed flask in the icebox overnight, crystals can often be found in the centrifuged sediment. A quantitative assay of cystine excretion is likewise essential. When stones are available for examination, the diagnosis is simple. The typical yellowish, smooth, multifaceted stone permits diagnosis at a glance. The authors urge patients to bring in any stones passed previously. A roentgenogram is then taken of them on dental film in order to evaluate the density and homogeneity of the stone. Almost all ureteral stones will pass spontaneously, but a few will require cystoscopic manipulation or surgical removal. It is wise to postpone the surgical removal of asymptomatic cystine stones until an effective therapeutic regimen has been instituted, since the patient with uncontrolled cystinuria can form new stones rapidly.

Attempts were made to increase solubility of cystine by alkalinization, or to decrease its concentration by forcing of fluids, but they were not entirely satisfactory, especially in patients with severe cystinuria. The results of measures designed to

decrease cystine output by chemical means, such as choline, or by low-protein diets have not been encouraging. The demonstration that methionine in dietary proteins is the principal source of exogenous cystine induced the authors to try a diet with a low-methionine content in 2 of their 4 patients with cystinuria who excreted extremely high amounts of cystine (3,000 to 3,600 mg. per 24 hours) and in whom alkalinization and forcing of fluids alone had failed to stop stone formation.

The essentials of a low-methionine (and cystine) diet are presented in an appendix to this paper. In the 2 patients receiving this diet, the authors found a notable and continuous reduction in the urinary excretion of cystine, arginine, and lysine. Moreover, there were no ill-effects (such as weight loss, asthenia, and anemia) for periods as long as 18 months. In one of the patients newly formed stones decreased in size; one stone disappeared, and the others became small enough to be removed cystoscopically. Both patients are now stone-free; their rates of cystine excretion are less than 600 mg. per 24 hours, i. e., in the range that forcing of fluids and some alkalinization can easily control.

Although the low-methionine diet may not be the final answer, at present it appears to be the most effective means of reducing cystine excretion in severe cases. The authors believe that the treatment of every patient with cystinuria must be individualized, and that the quantitative excretion of cystine is the basis for rational therapy, as well as for judging prognosis.

OPHTHALMOLOGY

Pseudotumor Cerebri or Benign Intracranial Pressure. O. Sitchevska. Am. J. Ophth. 47: 215-219 (Feb.) 1959 [Chicago].

The author presents the history of 2 girls, aged 5 and 7 years, respectively, with pseudotumor cerebri. The first patient, who had impairment of vision with marked bilateral papilledema and retinal hemorrhages, responded well to a right subtemporal decompression. However, there was pallor of the optic disks due to secondary optic atrophy, and the vision was reduced to 20/50 in the right eye and to 20/40 in the left eye. The second patient, in whom lumbar puncture revealed that the cerebrospinal fluid was under increased pressure, recovered spontaneously and had good vision and normal visual fields.

The author presents a brief review of the literature, pointing out that most reports on this condition were published in the neurological journals. Patients with failing vision or diplopia, however, may first consult ophthalmologists. The condition was first described by Nonne under the term "pseudotumor cerebri," in 1904. Other names given to the syndrome are meningoencephalitis serosa, serous meningitis, otitic hydrocephalus, or arachnoiditis, all characterized by chronic cerebral edema. A recent history of a head trauma, general infection, or otitis media is given by some patients. The true cause remains obscure. The intracranial pressure is increased, although there is no intracranial neoplasm. The onset is insidious, and the patients appear in good health. Papilledema is invariably bilateral. Headaches are frequent. Paralysis of one or both abducens nerves is common. The spinal fluid is under increased pressure, but its cell count and protein content are normal. Ventriculography reveals that the ventricles usually are small and symmetrically placed as if they were compressed by general swelling of the brain or by excessive fluid in the meninges. The visual acuity is reported to be impaired to a greater degree in pseudotumor cerebri than in elevated intracranial pressure due to a neoplasm. This syndrome usually occurs in young persons. It sometimes terminates in spontaneous recovery.

The Problem of Unilateral Amblyopia: A Preliminary Study of 10,000 National Health Patients. R. B. W. Cole. Brit. M. J. 1:202-206 (Jan. 24) 1959 [London].

Routine examination of 10,000 consecutive men, women, and children under the Supplementary Ophthalmic Service of the National Health Service disclosed that no fewer than 527 (5.27%) had unilateral amblyopia. This condition is colloquially known as "lazy eye." In 1% of all the patients examined, one eye was registrably blind, and in another 2% one eye had such poor vision as to be quite useless. In the remaining 2% of amblyopic patients the vision was so poor that binocular vision was absent. If this finding were extended to the population at large, it is apparent that, of every 100 children born, between 5 and 6 are destined to lose the use of one eye. Of the 527 amblyopic patients, 225 were male and 302 female. With an average distribution of 415 males and 585 females among 1,000 patients examined, the true sex incidence of amblyopia was 5.42% among males and 5.14% among females. There is a strong element of heredity in amblyopia, but its exact pattern is not known. Among the 527 patients with amblyopia, this condition involved the right eye in 224 (42.5%) and the left eye in 303 (57.5%). When the 527 patients were analyzed according to age groups, it appeared that in every group there was a significant number of amblyopic patients. The youngest amblyopic patient discovered was 4 years old, and the oldest was 85 years of age.

This condition of unilateral amblyopia is well known throughout the civilized world as a source of wastage of man-power in times of national emergency. Its economic and social disadvantages

are equally serious, especially should anything happen to the good eye. An amblyopic patient is usually ignorant of his disability, relying unconsciously on his good eye. Unfortunately the condition develops in infancy and early childhood, and by the time the child starts school, it too often has become permanently established. Although the National Health Service offers free and comprehensive medical care of the entire population, the unexpected gap in the medical eye service, shown by the still continuing development of one useless eye in 5 out of every 100 children, is due to the fact that the first compulsory or general examination of children's eyes takes place after they have started school, when unilateral amblyopia is already well established. Early and regular ophthalmic examination of all children is indicated if this disability is to be attacked.

The Surgical Treatment of Herpetic Keratitis. M. Fine. California Med. 90:121-125 (Feb.) 1959 [San Francisco].

Corneal transplantation is at the present time the treatment of choice for controlling or terminating recurrent or chronic herpetic keratitis. Of the 48 keratoplastic operations carried out on patients with various forms of corneal herpes, 16 were performed on patients with quiescent keratitis, and 32 on patients with active keratitis. The operation brought about improvement in all but 3 patients. Recurrence of keratitis in the graft is particularly likely to occur if the visible lesion is not excised completely and if a portion of the graft border lies in contact with the diseased tissues. The reason why corneal transplantation is improving herpetic keratitis is unknown. In patients with chronic stromal herpes the removal of the necrotic corneal tissue by transplantation of cornea appeared to influence promptly and favorably the course of the disease. Even in patients in whom the transplant has not remained completely clear, the congestion of the globe was greatly relieved, often within a few days after operation, and uveitis subsided.

THERAPEUTICS

Hydrochlorothiazide in the Treatment of Congestive Heart Failure. A. N. Brest and W. Likoff. Am. J. Cardiol. 3:144-147 (Feb.) 1959 [New York].

Hydrochlorothiazide (Esidrix), a new orally administered diuretic, was given to 20 patients with congestive heart failure. In 16 of the 20 patients, the congestive failure was successfully controlled with the aid of this diuretic. Of the 16 patients, 4 had never been treated with diuretics and were given 50 mg. of hydrochlorothiazide either once or twice daily; 3 patients had been controlled only with the aid of diuretics and were given 50 mg. of hydrochlorothiazide twice daily; 9 patients had been refractory to treatment for congestive failure and were given 50 mg. of hydrochlorothiazide 3 times per day. Of the remaining 4 patients, 2 were improved, but their congestive failure was not completely controlled; 1 patient was unable to tolerate the drug because of severe nausea; and 1 patient failed to show any diuresis while receiving hydrochlorothiazide. A mild hypochloremia developed in all patients who were maintained on hydrochlorothiazide, but no significant changes in serum sodium or potassium level were observed. No deleterious hematological or renal changes occurred. The only side-effect observed was nausea, and only in one patient was this severe enough to prevent the continued administration of hydrochlorothiazide.

Evaluation of Chlorothiazide in the Diuretic Therapy of Congestive Heart Failure. L. J. Warshaw. Am. J. Cardiol. 3:167-179 (Feb.) 1959 [New York]

Chlorothiazide was administered orally to 98 adult patients with clinical evidence of fluid retention amenable to diuretic therapy; 61 of these patients had congestive heart failure, 13 had heart disease with cardiac failure precipitated by endocrine imbalance, and 24 were noncardiac patients with fluid retention secondary to endocrine imbalance. Except for 17 patients with acute decompensation, all the patients were treated on an outpatient basis. No attempt was made to standardize the dose of chlorothiazide. Most of the patients were given a single dose of 1 Gm. of the drug administered orally each morning. Many of the patients required a second dose of 1 Gm. in midafternoon. In 3 patients who seemed resistant, increased doses up to 4 Gm. daily for several days were tried, but proved to be no more effective. Chlorothiazide alone, in doses ranging from 1 to 2 Gm. daily, satisfied the diuretic requirements of 85 (87%) of the 98 patients. Patients previously maintained on mercurials administered parenterally required more frequent doses of chlorothiazide to achieve comparable results. Instances of lack of effectiveness and development of tolerance appeared to be somewhat more frequent than with parenterally administered mercurials, but much less frequent than with any other currently available, orally administered diuretic.

Chlorothiazide showed no significant local or systemic toxicity other than a few instances of gastrointestinal irritation. Low potassium levels of the blood were noted in a few patients, but none of the clinical disturbances associated with potassium depletion were seen. Chlorothiazide is a satisfactory orally administered diuretic both for the initial treatment and for the maintenance of patients with congestive heart failure. Its ease of administration does not eliminate the necessity of continued careful

observation and the individualized adjustment of dosage schedules to meet each patient's changing requirements.

The Management of Congestive Heart Failure with a Free Salt Intake. I. S. Eskwith. Am. J. Cardiol. 3:184-191 (Feb.) 1959 [New York].

The author reports on 14 men and 9 women, between the ages of 26 and 83 years, with congestive heart failure who were placed on a regimen of digitalis, diuretics, and a free sodium intake. Chlorothiazide in doses of 0.5 Gm. 3 times daily for one week, and 0.5 Gm. twice daily for maintenance, was used as the mainstay of diuretic therapy, with a priming injection of a mercurial diuretic. Free salt intake was permitted. There were 2 exceptions to this general treatment scheme. A 62-year-old woman was given 2 cc. of meralluride weekly because of intolerance to chlorothiazide. A 73-year-old man had moderate intolerance to chlorothiazide and continued with only 0.25 Gm. of the drug, given twice daily. Results were excellent in 19 of the 23 patients, fair in 3, and poor in 1. Dyspnea and/or edema completely disappeared in the 19 patients who became relatively fully active. Incomplete relief of edema or dyspnea resulted in the 3 patients, or for at least 2 years they were without an attack of decompensation. Fifteen of the 23 patients had blood urea nitrogen determinations performed, which showed no evidence of renal insufficiency or progression of an existing insufficiency.

Patients appreciate the greater freedom in dietary intake they now enjoy. It is the author's feeling that restriction of sodium in the management of this syndrome is ineffective, except in the mildest cases, and that its continued use is superfluous with the diuretics now available. It is also postulated that the regimen of digitalis, chlorothiazide, mercurial injections when needed, and a free salt diet will eliminate many electrolyte disturbances now observed in patients with congestive heart failure.

Critical Considerations on Therapy with Massive Doses of Prednisolone in Patients with Malignant Hemoblastoses. J. Böhnel and A. Stacher. Klin. Med. 14:19-25 (Jan.) 1959 (In German) [Vienna].

The authors report on 9 women, between the ages of 19 and 51 years, on a 50-year-old man, and on a 7-year-old boy; 4 of these patients had acute granulocytic (myeloblastic) leukemia, 5 had Hodgkin's disease, 1 had lymphosarcoma, and 1 had carcinoma of the thymus. These patients were given an average dose of 250 mg. of prednisolone (Deltacortril) by mouth daily for 7 to 15 days. In the patients with acute leukemia the treatment with such massive doses of prednisolone did not show any advantages as compared with that with smaller doses. The patients with Hodgkin's disease had such excellent remissions as had never been obtained with other types of therapy. This was of particular importance in patients who had become resistant to cytostatic therapy; prednisolone therapy made it possible to resume treatment with other cytostatics after intervals of weeks or even months. Temporary regression of the tumor resulted from prednisolone therapy in the patient with lymphosarcoma, and temporary subjective improvement occurred in the patient with carcinoma of the thymus. Complications of prednisolone therapy consisted of ulcer of the stomach in 1 patient and of increased hemorrhagic diathesis resulting from thrombopenia in 7 patients, 3 of whom died of cerebral hemorrhages. Physiological effects resembling those observed in patients with adrenal cortical hyperfunction (Cushing's syndrome) were observed in all the patients but were less pronounced than those occurring after prolonged cortisone therapy.

The mechanism of action of the glucocorticoids, particularly when administered in massive doses, has not been fully explained. The glucocorticoids do not exert a direct effect on the cells, but may act rather by "induced reactions and metabolites." Despite the reduced coagulation potential, thromboses may occur. Before an unequivocal explanation of the action of the glucocorticoids has been found, treatment with massive doses of prednisolone should be limited to patients with Hodgkin's disease and lymphosarcoma, who have become resistant to treatment with cytostatics and to cortisone therapy with small doses. In patients with acute leukemia the increased risk of complications outweighs by far the insignificant advantages of massive dosage.

Cycloserine and Viomycin in Combined Treatment of Pulmonary Tuberculosis: A Comparative Study. I. Ståhle. Acta tuberc. scandinav. 36:83-97 (no. 2-3) (In English) [Copenhagen].

After reviewing earlier investigations on the tuberculostatic antibiotics, cycloserine and viomycin, the author describes investigations designed to test the action of new combinations of tuberculostatics in patients with pulmonary tuberculosis. The combinations studied were cycloserine-isoniazid and cycloserine-viomycin, and the results obtained were compared with those of a third combination PAS-isoniazid. The cycloserine preparation used was cycloserine tartrate. The combination cycloserine-isoniazid was given to 28 patients, cycloserine-viomycin to 30, and PAS-isoniazid to 34.

The tuberculostatic effect, evaluated both clinically and roentgenologically, was comparable for all 3 combinations and was somewhat better for those that included cycloserine. Healing of cavities was especially good with the combination cyclo-

serine-viomycin. The resistance of tubercle bacilli to the antibiotics could be determined only before the institution of treatment, because in all patients tubercle bacilli disappeared from the sputum quite rapidly. Initial resistance to cycloserine-isoniazid was observed in one patient who had not been treated with cycloserine previously. The tolerance for both cycloserine and viomycin was excellent, and no side-effects attributable to these antibiotics were observed. Symptoms of intolerance to PAS and isoniazid appeared in a few of the patients. The author concludes that cycloserine and viomycin are of great value in the combined treatment of patients with pulmonary tuberculosis, particularly when used together.

PATHOLOGY

Perineal Carriage of Staph. Aureus. M. Ridley. Brit. M. J. 1:270-273 (Jan. 31) 1959 [London].

Cultures were made from each nostril and 16 skin sites and press plates were taken from the front and back of the drawers of 50 medical students. By impressing an area of the inside of the drawers directly on the surface of the medium in a Petri dish with a circular wooden block, cultures were made from the perineal area. The results of this investigation showed that 26 (52%) of the students had no Staphylococcus pyogenes var. aureus in the nose or on the skin and that 13 (26%) had these organisms in the nose, generally in very large numbers, but the perineal area yielded fewer than 30 colonies from the 6 sites chosen for examination. A further 6 students (12%) had much greater degrees of contamination of the perineal area and were heavy nasal carriers as well. The remaining 5 students (10%) had an equal degree of contamination of the perineal area, but no staphylococci in the nose or only 1 or, at most, 5 colonies. Thus, sufficiently large numbers of Staph. pyogenes var. aureus were isolated from the perineal area of 22% of male adults to class them as perineal carriers.

Repeated nose and skin tests were carried out on most of the nasal and perineal carriers revealed by the initial tests. These repeated tests and additional studies showed that the carrier state may persist for months in 14% of the persons tested, that it is not due to fecal contamination alone, that the organisms are able to multiply in or on the perineal skin, that they may be of a different phage type from those found in the nose or feces, and that they may be dispersed into free air when the carrier exercises in a cubicle of plastic curtain material for 15 minutes by waving his arms about while wearing his ordinary everyday clothing.

The reported findings show that a comparatively large proportion of persons have sufficient numbers of Staph. pyogenes var. aureus on the skin of the perineum and adjacent structures to suggest that the organisms are able to colonize this area. Many of these persons have the organisms in the nose as well, while a few are primarily perineal carriers with few or none in the nose. In such persons multiplication of staphylococci on the perineum appears to be the most likely explanation for the persistence of large numbers in this site for considerable periods of time. Both the nasal vestibule and the perineal skin are areas in which large apocrine glands are found. It may, therefore, be that these glands offer a suitable environment for the survival and multiplication of Staph. pyogenes var. aureus.

Renal Papillary Necrosis: Clinical Study of 14 Patients. J. Jornod. Helvet. med. acta 25:669-693 (Dec.) 1958 (In French) [Basel, Switzerland].

Fever, prostration, nausea, and pain in the lumbar region were the most frequent, but not uniform, symptoms of renal papillary necrosis in 14 patients in whom the disease was diagnosed on autopsy. The observed biochemical changes were normochromic anemia, high white blood cell count, increased erythrocyte sedimentation rate, low serum cholesterol level, fat infiltration of the liver, elevated glycemia not necessarily related to diabetes, and symptoms of acute renal insufficiency. Frequent instances of pyuria and isosthenuria were accompanied by occasional recordings of slight albuminuria and slight hematuria. Roentgenologic findings, such as enlarged and extended calyces, hollow shadows, and contracted rings, may have suggested the presence of renal papillary necrosis, although the diagnosis must be complemented or confirmed by microscopic examination of the urine or by surgery. The histological findings disclosed necrosis of the renal papillae, being mostly a bilateral condition. This process is limited by the infiltration of leukocytes and is associated with interstitial nephritis. Its pathogenesis is attributed to hemodynamic and histochemical disorders, which are not yet understood. The disease has no sex or age group preference. A differential diagnosis of renal papillary necrosis should be made with acute pyelonephritis, acute renal insufficiency accompanied by anuria, infarction of the kidney, hematuria, thrombosis of the renal vein, renal or ureteral lithiasis, renal tumor, and tuberculosis.

Medical treatment of renal papillary necrosis is delusive. Surgical treatment (nephrectomy) is contingent on an early diagnosis of the disease, on the general state of the patient's health, and on functional integrity of the other kidney. Prophylaxis of renal papillary necrosis is based on the treatment of infections of the urinary tract and on the treatment of conditions which predispose to the development of these infections, such as malformations of the urinary tract, enlarged prostate, and the presence of diabetes mellitus.

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Relation Between Systemic Histiocytic Sarcomatosis and Leukemia: Consideration of Two Instances Classified as Leukosarcomatosis. P. C. Gamalero and E. Segagni. Minerva pediat. 10:1491-1498 (Dec. 15) 1958 (In Italian) [Turin, Italy].

The authors observed in 2 boys, aged 7 and 8 years, respectively, the onset and progressive course of lymphosarcomatosis, followed by fatal lymphocytic leukemia. The mother of the younger boy had disorders of the pituitary body. This boy began to have intermittent febrile episodes a month before hospitalization. On admission, a mass, diagnosed as a lymphoma, was roentgenologically observed in the mediastinum. Histological examination of a resected enlarged right axillary lymph node revealed the presence of lymphosarcomatosis. Examination of the peripheral blood and the sternal puncture showed no pathological change. The older boy had had a suppurative inguinal lymphadenitis on the right 2 years before admission. In addition to pallor, he developed cough, intermittent fever, and enlarged cervical, axillary, and inguinal lymph nodes a month before admission. Examination at the time of admission revealed enlarged spleen (on inspection) and enlarged lymph nodes in the mediastinum (on roentgenologic observation). Histological examination of a peripheral lymph node suggested the diagnosis of lymphoreticulosarcoma. Morphologic examination of the peripheral blood revealed the presence of lymphocytosis. Sternal puncture disclosed the existence of reticular lymphoid cells.

A combination of drug therapy (corticotropin), blood transfusion, and antihemorrhagic treatment, followed by a course of roentgenologic therapy, brought temporary relief to the 2 patients. But a fatal clinical picture of acute lymphoid leukemia of short duration appeared in both boys shortly after completion of the x-ray therapy. This clinical picture (known as leukosarcomatosis) is a contribution to the theory that postulates a pathological nexus between the appearance of sarcomatous neoplasm of the lymph nodes and the subsequent development of acute leukemia.

Staphylococcal Septicaemia. J. E. Hassall and P. M. Rountree. Lancet 1:213-217 (Jan. 31) 1959 [London].

This report is based on 86 cases of generalized staphylococcic disease that occurred during the 8 years from 1950 to the end of 1957 at the Royal Prince Alfred Hospital in Sydney, Australia. In this large hospital, generalized staphylococcic infection occurring in patients after admission with other illnesses was not a problem before 1952. Since then numerous cases have occurred. The number of patients admitted with staphylococcic septicemia has also increased sharply since 1954. Study of the histories of the patients, and sometimes of the phage type of Staphylococcus organisms isolated, placed the patients in either the group infected outside the hospital (46) or the group who acquired their infection in the hospital (40). The criteria for diagnosis of generalized infection with coagulase-positive staphylococci included one or more of the following: (1) clinical evidence of generalized infection, together with culture of the organisms from one or more sites; (2) growth of organisms from blood culture; and (3) pyogenic lesions of the internal organs found at autopsy, together with culture of the organisms from these lesions or from the blood.

Of the 40 patients who were infected in the hospital, 31 died. The infecting staphylococci belonged to only a few phage types. These infections started in 1952, and all followed surgery, intravenous therapy, or the exhibition of cortisone. Of the 46 patients who acquired their infections outside the hospital, 19 died. Up to 1954 there was an average of 2 such cases each year, but the incidence rose notably in the 3 following years. This increased incidence was due almost entirely to infections with strains of phage type 80/81. In 1957 the mortality rate in both categories of patients fell. This decline coincided with keener awareness of the problem of staphylococcic cross infection, earlier diagnosis of septicemia, and intensive treatment with effective antibiotic combinations.

PUBLIC HEALTH

Cancer and Bronchitis Mortality in Relation to Atmospheric Deposit and Smoke. P. Stocks. Brit. M. J. 1:74-79 (Jan. 10) 1959 [London].

Residents in large towns of England and Wales have always been subject to higher death rates than country dwellers. Two diseases for which the urban excess is pronounced are bronchitis and lung cancer, and this is so in some regions for gastric cancer, whereas cancers of the intestine and breast show little relation to urbanization. Atmospheric pollution of the kind found in British towns has been under suspicion as a causative agent both for bronchitis and for lung cancer, and the author suggests that pollution of food by exposure to dirty air might be a cause of the higher incidence of gastric cancer in towns. He describes an attempt to obtain more conclusive evidence on these points by relating standardized mortality from bronchitis and cancers of 4 sites, with measurements of atmospheric deposit and suspended matter (smoke), in the county boroughs of England and Wales and in the administrative areas of Lancashire and the West Riding of Yorkshire, where such measurements have been made.

Throughout his report the author refers to the standardized mortality ratio (S. M. R.), which means 100 times the actual deaths of residents in an area divided by the number which would have occurred if the death rates at each age had been the same as the rates for England and Wales as a whole. He found that, when the S. M. R.'s for bronchitis and cancers in the county boroughs of England and Wales are related to the average amounts of undissolved deposited matter and smoke from the air in towns, highly significant statistical correlations are found for bronchitis and lung cancer with both types of pollution after eliminating the effects of population density on the correlations. In all administrative areas in Lancashire and the West Riding of Yorkshire having the necessary pollution data, bronchitis is significantly correlated with deposit but not with smoke, while for lung cancer the reverse is the case. In Lancashire areas lung cancer is strongly correlated with population density in adjacent districts even when that of the area itself is held constant, and this appears to confirm the effect of wind-borne smoke on the incidence of the disease.

Stomach cancer mortality is related significantly with both undissolved deposit and smoke in the county boroughs, and among women in the Lancashire and Yorkshire districts also, whereas breast cancer shows negative correlations in the county boroughs and no relation with air pollution in the counties. The most likely explanation of this is the exposure of food to dirty air, and this hypothesis is supported by the fact that in the United States, where wrapping of food was the rule long before it began to be practiced in Britain, death rates from stomach cancer have fallen steadily in contrast to their lack of improvement in Britain. Intestinal cancer also shows small correlations with deposit and smoke in the county boroughs, but these correlations are below the conventional level of significance.

Admission of Patients with Alcoholism to General Hospitals in New York State. I. J. Brightman, C. M. Royle, B. Ferber and others. New York J. Med. 59:237-247 (Jan. 15) 1959 [New York].

The authors made a survey in New York State of general hospital policies in regard to admission of patients with a primary diagnosis of alcoholism. Of 356 general hospitals to which a questionnaire was mailed, 315 returned the appropriate forms answering the questions. About 20% of voluntary general hospitals and 35% of public general hospitals indicated that their policies provided for the admission of alcoholic patients. Only 9% of proprietary general hospitals admitted such patients. Only 50% of the nonadmitting hospitals stated that their regulations precluded their accepting alcoholic patients. About 40% of the admitting hospitals found the patients to be not too troublesome, and almost all found that tranquilizing drugs were particularly helpful. A surprisingly large proportion of alcoholic patients paid for part or all of their care or had such payments made in their behalf. The figures present a state-wide picture only, and it may be expected that there will be much variation when the situations are studied on a community base. It is hoped that the communities will study their local problems and attempt to encourage the admission of alcoholic patients to general hospitals, if this policy has been deficient in the past. A comparable study of proprietary hospitals for nervous and mental diseases indicated that 15 out of 16 admitted alcoholic patients.

Five Years' Experience with Fluoridation in Norway, Maine. A. H. Garcelon. New England J. Med. 260:127-129 (Jan. 15) 1959 [Boston].

The town of Norway, Maine, began fluoridating its water supply on Oct. 17, 1952. An earlier report presented evidence that beneficial effects began to become apparent in children, 6 to 9 years old, within 30 months after fluoridation was started. The present study was designed to determine what effects fluoridation had on the permanent teeth of children, 6 to 14 years old, who used the fluoridated water supply continuously for the first 5 years after fluoridation was started. Between 1952 and 1957, the average numbers of decayed, missing, and filled permanent teeth were reduced by more than half among the children, 6 to 9 years of age, by more than a quarter among the children, 10 to 12 years of age, and by about a tenth among those, 13 and 14 years old. During the same interval, the percentage of children, 6 to 9 years old, who were entirely free of dental decay in permanent teeth more than doubled.

Except for one group, which was too small, the differences in rates are all statistically significant. Hence, children, 6 to 14 years old, who used the fluoridated water supply continuously after fluoridation was started received significant benefits from the first 5 years' fluoridation, even though in some of them many of their permanent teeth had erupted before fluoridation began. Since the maximum benefits of fluoridation occur when the fluoride is incorporated in the tooth enamel while it is being formed, the younger children, who had more of their teeth formed under fluoridation, received greater benefit than the older children. Since the beneficial effects continue undiminished throughout life once the decay-inhibiting effect is established, as succeeding generations are brought up on the fluoridated water supply, an increasing proportion of the population of Norway, Maine, will benefit from fluoridation.

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BOOK REVIEWS

Cardiac Arrest and Resuscitation. By Hugh E. Stephenson Jr., M.D., Professor and Chairman, Department of Surgery, University of Missouri School of Medicine, Columbia. Cloth. $12. Pp. 378, with 31 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1958.

Considering the importance of the subject of cardiac arrest and resuscitation it is surprising that this is the first comprehensive monograph to be written about it. It is not surprising that its editor should be Dr. Stephenson, since no one man has shown a more intense interest in the subject. He has been helped in this effort by several authoritative contributors. The book is all-inclusive, with chapters on history, incidence, etiology, diagnosis, management, prevention, complications, and prognosis. The author is to be commended for including a chapter on the care of the patient in the postresuscitative period, as this phase of the subject has been neglected. He has not, however, given hypothermia the emphasis it deserves as a means of preventing permanent neurological defects. Of added interest also are the chapters on the medicolegal aspects of cardiac resuscitation and elective cardiac arrest in open-heart operations. This book should be a welcome addition to the library of any surgeon. The chapter on the prevention of cardiac arrest is especially worthwhile.

The English Health Service: Its Origins, Structure, and Achievements. By Harry Eckstein. Foreword by James Howard Means, M.D. Harvard political studies published under direction of Department of Government in Harvard University. Cloth. $5.50. Pp. 289. Harvard University Press, Cambridge 38, Mass.; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, England, 1958.

This volume describes and evaluates the origins and 10 years' performance of England's National Health Service (NHS). The unplanned growth of medical care is traced from the poor laws of the 1830's through the compulsory health insurance of 1912 to the present arrangement. The conditions existing prior to enactment of the National Health Service and allegedly necessitating its introduction are characterized as "deplorable" on the testimony of the Collings Report. The proclaimed objectives of the NHS were to increase the supply of medical services and to rationalize the system. As achievements of the NHS the author cites geographical redistribution of physicians and, to a lesser extent, hospital facilities; an increase in the number of physicians and apparent improvement in their financial security; and at least no deterioration in doctor-patient relationships.

The author condones the shortcomings of the NHS in part because of the shortage of all kinds of resources to meet Britain's postwar needs. The shortcomings include negligible expansion of hospital facilities—"only 3,000 beds represent an absolute increase in capacity" by 1955 and "capital expenditures on hospitals in 1952-53 were only 32 per cent of those in 1938-39 [in real values]"; aggravation of this condition by abuses of the NHS; and lack of coordination and cooperation between isolated regional hospital boards and particularly between many local authorities, hospitals, and general practitioners. The author doubts that the well-known defects of multilevel bureaucracy under one powerful minister have modified the practice of medicine, although he admits, for example, that the method adopted to classify procedures has resulted in paying surgeons more for an easy operation than for a difficult one.

Physicians' dissatisfaction with the remuneration under the NHS is well known. The author seems too disposed to attribute shortcomings of the NHS to the "deplorable" preexisting conditions. He does not adequately define his tests and criteria of evaluation. Data are not plentiful, and he does not seem to have considered any other alternatives to either the preceding or the present system. We admit that socialization appears to be an irreversible process, but some modifications would seem to be conceivable. His discourse on planning (in the epilogue) is inappropriate, revealing shortcomings in his understanding of a market economy as well as a decided preference for planning. Although he found rational action lacking under a "rational system," using the NHS as a test, he still urges planning of an imperfect variety. His additional recommendation that the Minister of Health "go on a spending spree" reveals another bias.

One of the most profound issues, "whether there can be any price system at all (in the classical sense) in such areas as medicine," is relegated to a footnote. The author apparently does not know of "opportunity cost," yet it is well known that when the price of one item of consumption is reduced to zero, overconsumption inevitably results. To the extent that satisfaction of additional (free) health wants is less valuable to the British citizenry than that of the nonhealth wants consequently foregone, the NHS is costly indeed. Moreover, when varied wants are equalized through zero price, the less valuable may be satisfied (through spectacles and dentures) prior to the more valuable (through new health centers). For these reasons the author's efforts to demonstrate that the system is not costly

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

are superfluous and unconvincing. The definitive study of England's National Health Service is yet to be written.

Comprehensive Medical Services Under Voluntary Health Insurance: A Study of Windsor Medical Services. By Benjamin J. Darsky, M.A., Nathan Sinai, Dr.P.H., and Solomon J. Axelrod, M.D., M.P.H. Bureau of Public Health Economics, School of Public Health, University of Michigan, Ann Arbor. Cloth. $7.50. Pp. 392, with illustrations. Harvard University Press, Cambridge 38, Mass.; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, England, 1958.

Comprehensive physicians' services can be provided under voluntary health insurance sponsored by a local medical society on a fee-for-service basis. This conclusion is based on the study of Windsor (Ontario) Medical Services (WMS), Inc., made in 1954 under a grant from the Health Insurance Foundation by the Bureau of Public Health Economics of the University of Michigan. The recent growth of a series of experiments providing for the payment of physicians' services outside the hospital under different Blue Shield and other voluntary health insurance plans makes this first large-scale study of the operation of a similar plan of great interest. The report provides detailed information on the background and organization of the WMS; the use of physicians' home and office services, and services for hospitalized illnesses; the attitude of the public and the local medical profession toward the plan; the physician-patient relationship under the WMS; claim administration; and the effects of the plan on medical practice in Windsor.

On the basis of a survey of the Windsor population and physicians, and a survey of records, it was concluded that the medical profession and the subscribers support and approve WMS; WMS is financially stable and administratively sound; both the physician and the patient are satisfied with the method of control; and medical care is "adequate and sound," with the subscribers to WMS initiating care more frequently than other people in the community. The value of this pioneer effort in research is hampered by the limitation of the study to the techniques of the social scientists. Judgments on medical care were made on the basis of replies to questionnaires by both patients and physicians, and not on the basis of the medical management of cases. As a basis for comparison with future studies, the bench marks used (services provided by physicians) may be of limited applicability. The nature of medical care is constantly improving. Services that had meaning at one time may not be of such great value a decade later. What comparisons can future physicians make with these service bench marks?

Although the WMS does not include payment for direct hospital charges, the authors found the use of the hospitals was slightly greater than for non-WMS members. Similar differences were found in studies of the Saskatchewan Health Services Plan, but studies in New York City by the Health Insurance Plan showed that hospital use was less under their plan than under a plan providing Blue Shield coverage. What caused these differences between the United States and Canada? Was it chance, or something inherent in the practice of medicine in certain areas of Canada? The present study, unfortunately, does not provide analysis of the critical points of variations and differences that evolved in the Windsor area. A great deal of comparison is made between the persons with WMS and those covered by other plans. One area of interest would have been an analysis of the premiums paid by those enrolled in other plans. The reader does not learn whether the scope of services provided under the WMS was a reflection of higher premiums paid by subscribers or due to the inherent nature of the operations of WMS. As with every research study, some flaws may be found, but the book provides a clear and reasonably complete exposition of the history and administration of a voluntary health insurance plan providing comprehensive physicians' services.

Progress in Medical Virology. Volume I. Edited by E. Berger and J. L. Melnick. Cloth. $11.50. Pp. 304, with 44 illustrations. Hafner Publishing Company, 31 E. 10th St., New York 3; S. Karger AG., Arnold Böcklinstrasse 25, Basel, Switzerland, 1958.

Despite the recent proliferation of various biological publications there is ample justification for a review series on the medical aspects of virology. Such a publication should keep clinicians and clinical investigators informed of advances in fundamental virology and should summarize and correlate the literature of viral disease. The editors seem to have had these objectives clearly in mind when planning this first volume in a projected series. On the fundamental level there are articles dealing with the structural and functional aspects of virus particles and the significance of persistent virus infections in tissue culture. Of more direct interest to the clinician are the reports on the 1957 pandemic of influenza and the critical review of the techniques used in preparing and evaluating poliomyelitis vaccine.

The editors have gone out of their way to obtain a truly international representation. There are articles from South Africa, the U.S.S.R., India, England, and the United States. With the wealth of material available in modern virological studies, and the ever-growing variety of virus diseases, it is difficult to understand the inclusion of articles which are redundant to the extent that several are concerned with similar diseases. Thus there are two articles dealing with diseases caused by the Russian spring-summer complex of viruses. There is also one article on the enteroviruses, including considerations of the clinical features of Coxsackie virus

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infection and another on neonatal myocarditis caused by the same virus. The redundancy is largely at the level of the subject material and not the content. A single efficient review article might have permitted the inclusion of a greater variety of topics.

The quality of the articles is uneven. Colter's review of nucleic acids and viral infectivity performs a useful service in collating pertinent information from animal, plant, and bacterial viruses. He enlivens his article with a critical consideration of some of the controversial topics in this snowballing field. Another rapidly growing field, that of persisting virus infection in tissue culture, is reviewed by Ginsberg. The potential importance of these investigations as a model for understanding the role of "latent" virus infections in man needs little emphasis. It was disappointing, however, to find no reference to the careful work of Vogt and Dulbecco, which perhaps contributed more than any other study to our understanding, at a cellular level, of the mechanism by which a virus persists in at least one of the carrier culture systems. It is perhaps even more difficult to understand the omission of any reference to the venerable but growing literature on the continuous production of tumor viruses by infected cells in vitro.

Melnick provides a thorough picture of the enteroviruses, including their fundamental physical and biological characterization as well as their clinical and epidemiologic significance. This article might serve as a prototype for future articles in the series, although few are as qualified as the author to present such a multifaceted picture. McClean and Taylor's article on poliomyelitis vaccine is an instructive analysis of the various steps involved in its manufacture from growth of the virus through inactivation and safety and potency testing. They make a convincing case for the technique of combined ultraviolet light and formalin inactivation of poliovirus. Their method for improving the safety test by simply increasing the volume of fluid tested per tissue-culture bottle is unconvincing in the absence of some supporting data. For instance, we know that if the volume of inoculum on a monolayer is increased beyond a certain point, the virus is not efficiently adsorbed.

It is difficult to understand the inclusion of Smith's article on virus flocculation reactions. The likelihood that these will replace the standard diagnostic tests now in use appears miniscule despite Smith's arguments to the contrary. The space might better have been used for a review of the practicable techniques available today. This criticism is not meant in any way to detract from the potential usefulness of the flocculation techniques in fundamental investigations of the nature of viruses. The paper on the Asian influenza epidemic is a welcome and highly competent review of a subject of great importance. The rest of the articles are best characterized as competent. The books suffers seriously from the absence of an index. A detailed table of contents preceding each article would also be useful. There is a disconcerting number of typographical errors in the text, and the quality of the binding, considering the price, is not impressive. Nevertheless, the series promises to fill an important need, and the succeeding issues are anticipated with the hope that criticisms will be taken kindly and to heart.

Poisoning by Drugs and Chemicals: An Index of Toxic Effects and Their Treatment. By Peter Cooper, F.P.S. Cloth. 25 shillings. Pp. 209. Alchemist Publications, Thomas Waide & Sons, Ltd., 25 Oxford St., London, W. 1, England, 1958.

This handbook is a compilation of 350 monographs on potentially toxic drugs and chemicals. The monographs were developed from an extensive collection of case reports of accidental poisoning and information from standard reference books on pharmacology and clinical and industrial toxicology. Each monograph includes a list of synonyms; concise notes on dosage, pharmacological action, toxic effects, and possible effects of massive overdose; suggestions for treatment; and simple aids for identification of the toxic substance. Occasionally abstracts of published cases are included. An appendix provides first-aid measures for the emergency management of poisoning, and a comprehensive index lists generic, proprietary, chemical, and common names. One of the particular merits of a book of this type is its brevity and clarity. By summarizing pertinent facts, it provides the concise and precise information required in poisoning emergencies.

Obstetric and Gynecologic Milestones: Essays in Eponymy. By Harold Speert, M.D., Assistant Professor of Clinical Obstetrics and Gynecology, Columbia University College of Physicians and Surgeons, New York. Cloth. $15. Pp. 700, with illustrations. The Macmillan Company, 60 Fifth Ave., New York 11; Brett-Macmillan, Ltd., 132 Water St., S., Galt, Ontario, Canada, 1958.

Most of the chapters in this delightful book are devoted to one historic person. The sections deal with anatomic parts and landmarks; measurements; clinical signs, tests, and rules; phenomena of pregnancy and labor; bacteria; ovarian tumors; syndromes; positions, instruments, and operations; and therapeutic procedures. It is well indexed. Every obstetrician and gynecologist should be delighted by the book, both for its historic value and as a reference work. There are many original illustrations and portraits. From the beginning of history men's names have become part of our language, often to the point where they are spelled with small letters. Every science and art contains these eponyms, which are a tribute to the men involved. The author states that the use of proper names in anatomy has long been disputed, and in 1855 a commission could not agree and compromised by

allowing their retention in brackets after the objective Latin names. Their fate was to be decided by time and general usage. Such terms as eustachian tube, Glisson's capsule, and circle of Willis are too deeply entrenched to be uprooted.

The book is a compilation of essays, about half of which have been previously published in journals, so it is more or less a chronological record of the development of obstetrics and gynecology. Each chapter gives some history and background concerning the subject under discussion. Many of the feuds and conflicts concerning contemporary names with original prints, excerpts, and translations of original texts are shown. The intentness, precision, and thoroughness that some of the early men of medicine demonstrated is discussed. The accuracy of the material is praiseworthy, and the controversies seem to be presented in an unbiased fashion. In general these men were broadly educated and were often heads of such departments as physics or chemistry before assuming the chair of medicine. Many were young when they received the Doctorate of Medicine. Whether the use of eponyms in medicine is good or bad is debatable, but unless a man's name is attached to an instrument, disease, or anatomic part he is soon forgotten. Famous men, dead less than five years, are unknown to today's young physicians. This excellent book promises many years of rewarding reading.

Surface and Radiological Anatomy for Students and General Practitioners. By A. B. Appleton, W. J. Hamilton, and Ivan C. C. Tchaperoff. Fourth edition by W. J. Hamilton, M.D., D.Sc., F.R.S.E., Professor of Anatomy in University of London at Charing Cross Hospital Medical College, London, and G. Simon, M.D., B.Ch., D.M.R.E., Demonstrator of Radiological Anatomy in Medical College of St. Bartholomew's Hospital, London. Cloth. $9.50. Pp. 355, with 416 illustrations. Williams & Wilkins Company, 428 E. Preston St., Baltimore 2, 1958.

The new edition of this well-established textbook by an anatomist and a radiologist emphasizes the dynamic and functional aspects of topographic and radiologic anatomy. By the use of radiology the reader is given a clear picture of body structure as it appears in the living subject. The value of radiology in the teaching of gross anatomy is generally accepted in medical schools. This book should be useful to the student of anatomy, as it correlates topographic and radiologic anatomy by parallel illustrations of surface contours and reproductions of radiographs of the underlying structures. This edition has been extensively rewritten, revised, and rearranged. The subject matter is organized on a regional basis with separate chapters devoted to general anatomy and methods, upper limbs, chest and back, head and neck, vertebral column, and lower limbs. The text is liberally illustrated with excellent radiographic reproductions, photographs, line drawings, and diagrams. By extensive use of illustrations the authors provide a means of coordinating radiologic anatomy with surface landmarks determined by external examination and those details which can be determined only by dissection. This excellent, well-illustrated textbook is strongly recommended to undergraduate and postgraduate medical students and to students in such fields as x-ray technology, physical therapy, and physical education.

Emergency War Surgery: U. S. Armed Forces Issue of NATO Handbook Prepared for Use by the Medical Services of NATO Nations. United States Department of Defense. Cloth. $2.25. Pp. 411, with 18 illustrations. Superintendent of Documents, Government Printing Office, Washington 25, D. C., 1958.

As stated in the first chapter the purpose of this pocket-sized manual is to present "the principles and techniques of emergency care of casualties through the first three echelons; that is, the battalion aid station, the clearing station, and the field or evacuation hospital." The problems of definitive care of injured patients are excluded. The handbook is written in a clear, concise, and comprehensive manner which should enable it to fulfill its purpose in a most satisfactory manner. In addition, with a few modifications, this handbook should be useful to the civilian surgeon faced with the problem of caring for civilian injuries.

The contents are divided into four parts: The first deals with types of wounds and injuries, the second with response of the body to wounding, the third with general considerations of wound management, and the fourth with regional wounds and injuries. In addition, a glossary of drugs with national nomenclatures and several useful tables are included in the appendixes. There are excellent chapters on missile wounds, burns, cold injuries, crush injuries, blast injuries, chemical injuries, and radiation injuries. The management of patients with the various conditions considered is sound, and a section at the end of each chapter is devoted to the management of mass casualties. Problems of sorting patients with single and multiple injuries are well presented. The section dealing with regional wounds and injuries is particularly well done.

In some areas the civilian surgeon must greatly modify his approach to the injured patient from that presented in the NATO handbook. For example, he should be mindful of the fact that civilian missile injuries are generally of a much lower velocity than those of battle wounds; consequently, débridement of missile tracts must be more conservative. Similarly, in dealing with intestinal injuries, the civilian surgeon is permitted to take a more conservative approach. As a means of acquainting the newly commissioned military surgeon with the management and methods of evacuation of casualties, this volume should find a field of great usefulness, and, considering its size, the extent of detail is remarkable.

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QUESTIONS AND ANSWERS

LEUKEMIA AFTER IRRADIATION

To the Editor:—*A 37-year-old man with rheumatoid spondylitis was treated with deep x-ray therapy. In 1946 he had a total of 1,600 r to both sacroiliac joints over a period of four weeks. In 1947 he had a total of 1,200 r divided equally over the cervical, thoracic, and lumbar portions of the spine. Is the development of leukemia in this man a foregone conclusion? If not, what are his chances of developing leukemia?*

Edward J. Novak, M.D., Tuckerman, Ark.

Answer.—In some patients leukemia does occur after exposure to ionizing irradiation, but, as Warren (*J. Mt. Sinai Hosp. New York* **24**:1331, 1957) said, "Radiation is not the sole factor in production of the disease." The fear of leukemia developing after irradiation of the spine is founded mainly on the report of Court-Brown and Doll (Leukaemia and Aplastic Anaemia in Patients Irradiated for Ankylosing Spondylitis, Medical Research Council, Special Report Series, no. 295, London, Her Majesty's Stationery Office, 1956), who noted that there was an appreciable incidence of leukemia in veterans treated by x-ray over a prolonged period for ankylosing spondylitis. These findings, however, have not been observed by others using similar methods of therapy. In those patients in whom leukemia was noted, it followed long periods of exposure, often repeated, to x-ray. In the past 35 years, this consultant has treated with x-rays many patients who had arthritis, and leukemia subsequent to this treatment has not been observed. In the patient under discussion, the dose of x-ray given was not excessive or beyond usual therapeutic limits. Treatment was not persistent, and there was an appropriate interval between treatments. It is, therefore, not a foregone conclusion that this man will develop leukemia, nor is the chance of his developing this disease very likely.

AMEBIC GRANULOMA

To the Editor:—*How should amebic granuloma of the cecum be treated?* *M.D., Texas.*

Answer.—No information is given in the question regarding age, sex, signs, and symptoms referable to a particular patient. It is, therefore, assumed that information of a general nature is being sought.

Amebic granuloma (ameboma) is a rare complication of intestinal amebiasis. It is usually single and consists of a firm, nodular mass with a fibrous outer wall. It may be well localized, involving a small area of the colon, or it may occupy an extensive segment of the large intestine and contiguous tissues. The intestinal wall may be greatly thickened. The mass consists usually of an inner zone made up of necrotic tissue containing red and white blood cells, fibrin, and amebas and associated with varying degrees of sloughing; a middle zone formed principally of granulation tissue with profuse chronic inflammatory elements and superficial or deep abscesses containing few or many amebas; and a completely fibrotic outer zone. Amebomas occur most commonly in the cecum and rectum. Spicknall and Peirce (*New England J. Med.* **250**:1055, 1954) gave the location of 230 amebomas in 197 cases as follows: cecum, 40.9%; ascending colon, 3.1%; hepatic flexure, 2.2%; transverse colon, 9.5%; splenic flexure, 2.2%; descending colon, 1.7%; sigmoid, 5.2%; rectum and anal canal, 26.5%; and no location given, 7.4%. Carcinoma of the colon is the most important lesion to be distinguished from ameboma. The two may coexist. Appendiceal abscess, diverticulitis, actinomycosis, benign tumor, tuberculous enteritis, regional enteritis, and other conditions in which a mass may be associated with diarrhea should be considered in the differential diagnosis.

No single drug should be used in the treatment of ameboma. The following combination of antiamebic and antibacterial drugs is likely to give the best results: emetine hydrochloride, 0.06 Gm. intramuscularly, given once daily for not more than five days, together with chloroquine phosphate, one 0.25-Gm. tablet, given four times daily on the first day and thereafter twice daily for a total of 21 days. In patients in whom a differential diagnosis between ameboma and another inflammatory lesion cannot be made conclusively or in whom ameboma is associated with bacterial infection, emetine treatment should be followed by therapy with chlortetracycline or oxytetracycline, 0.25 Gm., given four times daily for 10 days simultaneously with chloroquine. The chloroquine therapy may be followed by a course of glycobiarsol therapy, 0.5 Gm., given three times daily for 10 days, or with diiodohydroxyquinoline, 0.5 Gm., given four times daily for 20 days, to eradicate the associated intestinal infection. In most patients the

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

above regimen will cause the disappearance of the lesion within a month of the beginning of treatment.

USE OF GLUCOCORTICOIDS

To the Editor:—*This dispensary treats a number of patients with allergic rhinitis and bronchitis, chronic disabling conditions for which treatments are generally unsatisfactory. In some patients the results are poor, there are unpleasant and even dangerous side-reactions, or high probabilities exist that long-continued treatment will produce an unfavorable patient-treatment relationship through the appearance of refractoriness or sensitization. The glucocorticoids have offered some hope of solving this problem, for they are extremely potent and can in some cases be used locally, thus avoiding some of the side-reactions. They are appearing in such bewildering variety, however, that it is hard to keep up with them. With each new product the general practitioner wants to know not only its side-reactions but also its proclivity for changing the patient, or the disease, into a less manageable state with this or related drugs and, particularly, how such side-reactions or proclivity are affected by use of the agent locally, such as in nose-drops or inhalation spray. One reason this is hard to decide is that the manufacturers seem to devote little attention to such items. Since this area is somewhat isolated and large medical libraries are not readily accessible, please recommend a recent, general evaluation of the glucocorticoid drugs with regard to the long-term management of allergic conditions, insofar as these can be distinguished from rheumatic conditions.* *M.D., California.*

Answer.—The glucocorticoids are generally considered to be of unequivocal value in affording symptomatic relief in patients with allergic diseases of the nasal or bronchial mucosa that are resistant to the usual forms of treatment. Their widespread use is limited, however, by the fact that they merely control the symptoms without attacking the underlying cause and by the high incidence of undesirable side-effects that they elicit. Attempts have been directed toward preparing new compounds with powerful anti-inflammatory properties and free from deleterious actions, but so far these have met with limited success. Prednisone and prednisolone are more potent on a weight of drug basis than cortisone and hydrocortisone and cause less sodium retention and potassium depletion, advantages in the treatment of patients with hypertension or heart disease. The incidence of other side-effects, however, is not appreciably reduced. Methylprednisolone, triamcinolone, and dexamethasone are even more powerful than prednisolone and prednisone, but they have not been used long enough to establish whether they offer a more favorable therapeutic ratio. Preliminary reports indicate, for example, that triamcinolone may give rise to weight loss, profound muscular weakness, and cutaneous erythema, effects that have not been observed with the other steroids. Fludrocortisone has about 25 times the anti-inflammatory action of cortisone but is such a potent sodium-retainer that it can only be used topically for the management of allergic conditions; even then, sufficient absorption may occur to produce sodium retention and edema. Local use of steroids, by inhalation or instillation, has been shown to be effective in the treatment of such conditions as bronchial asthma and allergic rhinitis. Prednisone and prednisolone, being water soluble, permit nebulization. Hydrocortisone and cortisone must be administered as a powder or in the form of a suspension. The advantage of this route is that much smaller amounts of the drugs are required. Systemic absorption is, therefore, limited in degree, and the cost of the drugs is reduced. Few long-term studies have been reported.

There is little information concerning the development of refractoriness to steroids in the treatment of such conditions as asthma and allergic rhinitis. Some investigators have reported lessened effectiveness in the relief of hay fever in subsequent seasons, but this is not a uniform finding. Others report a definite loss of activity with continuous use of steroids in asthma, but again there appears to be wide individual variation in this respect. Patients may become habituated to steroids after prolonged use, so that withdrawal becomes a problem even if the patient is seemingly deriving no benefit from the drug. There is no evidence that the steroids render other types of therapy any less effective. In fact, patients who have failed to respond to such preparations as epinephrine or aminophylline prior to steroid therapy may respond to these drugs after alleviation of their symptoms with steroids.

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EXCHANGE TRANSFUSIONS

TO THE EDITOR:—*How are donors chosen for exchange transfusions? The serum of the donor chosen for the first transfusion of a group O, Rh-positive baby with a group O, Rh-negative mother was crossmatched with the mother's serum. The second pint of blood, used from another donor and crossmatched with the mother's serum, was found incompatible in minor crossmatch—the donor's blood was not crossmatched with the baby's blood. If more than one pint is used, should the donor's blood be crossmatched with both mother's and baby's blood? If the blood is found incompatible in any phase, should that donor be rejected?*

William E. Arbuckle, M.D., Indianapolis.

ANSWER.—In general, newborn babies are incapable of forming antibodies, and any antibodies present in their serum represent maternal antibodies passively acquired by placental transfer. This permits a wide latitude in the method of selecting donors for treating erythroblastotic babies by exchange transfusion. In the typical case of erythroblastosis fetalis, where the mother is Rh-negative and the baby Rh-positive, Rh-negative donors must be used for the exchange transfusion, because Rh-positive blood can react with the maternal Rh antibodies present in the baby's blood. Wiener and Wexler prefer to use Rh-negative donors of the mother's A-B-O group. The advantage of this is that the donors can be selected before the baby is born and the mother's serum can be thoroughly checked during the antenatal period for its content of abnormal isoantibodies. If the mother's serum contains no abnormal isoantibodies other than anti-Rh_o, there is no valid reason why Rh-negative donors of the mother's A-B-O group cannot be used even without crossmatching. There need be no hesitancy giving group A blood to a group O baby when the mother belongs to group A, because the baby's serum will have no alpha antibodies and such blood will survive in the baby's circulation as long as group O blood.

If crossmatching tests are done, only the major match is essential, because the baby's red blood cells are going to be removed by the exchange transfusion in any event. Since any antibodies the baby may have are derived from the mother, the mother's serum should be used for the matching test if this is done, and this has the additional advantage that the mother's serum is easier to obtain than the baby's. It is not clear why a minor crossmatching test was made in the case described or why any incompatibility should have been detected in the minor crossmatch, since the donor and mother were both group O and Rh-negative. Most likely the reaction obtained was an artifact such as is not common in these tests, though the possibility that the donor's serum contained an irregular isoagglutinin, such as anti-P, cannot be excluded. In any event, the reaction in the minor crossmatch should not necessarily disqualify the donor.

Most workers prefer to use donors of the baby's A-B-O group rather than of the mother's. Still others routinely use group O, Rh-negative donors for all cases, with or without crossmatching. If group O donors are used routinely, the blood should be titered in order to eliminate those with high titers ("dangerous universal" donors), who theoretically might be undesirable for babies not belonging to group O. The routine use of group O, Rh-negative donors, while convenient, has the disadvantage that it is apt to deplete the supply of group O, Rh-negative blood.

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STERILIZATION OF CATHETERS

TO THE EDITOR:—*About 10% of the patients treated here are given intubation either by the oral or by the naso-oral (endotracheal blind intubation) approach. In sterilization of endotracheal catheters, the following technique has been used for many years and there seems to be no reason for changing this procedure: The catheters that are inserted through the nose are washed with soap and water or hexachlorophene, and then they are kept submerged in mercuric cyanide (1:3,000 solution). When they are used, they are rinsed off with ether and lubricated with a lubricating jelly. The trachea is aspirated through a small catheter which has been sterilized by the same solution. The endotracheal catheters with a built-in cuff are sterilized by the same method. They are removed from the mercuric cyanide solution, washed off or dried with ether, dusted with sterile glove powder, and kept wrapped in a sterile towel until use. At that time, the powder is washed off with ether and the balloon part of the catheter is lubricated with lubricating jelly before being inserted into the trachea. A serious vocal cord injury has not occurred. Postoperative hoarseness is rarely noted, and the incidence of postoperative lung complications has been low while this technique has been used. Is there any reason to switch to one of the newer agents?*

Eldon B. Tucker, M.D., Morgantown, W. Va.

ANSWER.—One hesitates to recommend changes in procedures when an inquirer states so emphatically that he has experienced no difficulty with "tried and true" methods. Most authorities in the field of antiseptics and disinfectants believe that the com-

monly used mercurials are poor germicides and, unless used carefully, have no place in modern disinfection. All are extremely slow to kill vegetative bacteria. No reference to the tuberculocidal or viricidal activity of mercuric cyanide has been found, although there is evidence that bichloride of mercury, a more toxic compound, in a concentration of 1:1,000 rapidly inactivates influenza and vaccinia viruses. For the destruction of vegetative bacteria, tubercle bacilli, and influenza and enteroviruses, one authority recommends flushing of rubber tubing, "shellack," and "web" catheters by syringing with Wescodyne (450 ppm available iodine), a 2% solution of Amphyl, or a 2.5% solution of Staphene, followed by immersion in the same solution for 10 minutes and rinsing and flushing thoroughly with sterile water. Other modern proprietary and nonproprietary solutions may also be effective. Thorough mechanical cleansing of the instrument should precede the above treatment. It is a moot question as to whether the excess handling required for powdering with a starch preparation (talc should not be used) and rinsing with ether is necessary with the types of catheters available today. There are a number of proprietary and nonproprietary solutions which serve satisfactorily for sterile storage of sterilized catheters.

ACTION OF TESTOSTERONE

To the Editor:—*In view of the recent development of many variations of testosterone and the conflicting claims of some of the pharmaceutical companies regarding their products, please give information on which of these are considered to be most anabolic and least androgenic when given clinical trials in human beings. Also, what attempts, if any, have been made to inhibit the antianabolic effects of corticosteroids by the use of these androgens? If such can be done, do the corticosteroids still possess anti-inflammatory activity when their antianabolic effects have been suppressed? Which of the anabolic steroids is considered the agent of choice in suppressing corticosteroid antianabolic effects? What are the relative proportions of corticosteroids to androgens which are necessary for such activity? In the presence of corticosteroids and androgens, is there any inhibition of the antiallergic effects of corticosteroids (assuming that antiallergic effects and anti-inflammatory effects are not the same)? The same question may be posed in regard to inhibition of antibody reactions, again assuming that these are not necessarily related to antiallergic and anti-inflammatory effects.*

M.D., Washington.

Answer.—Generally speaking, the greater the anabolic effects of a derivative of testosterone, the greater are its androgenic effects. Most derivatives or variants of testosterone are compared clinically to the propionic acid ester of testosterone. Testosterone propionate, when given parenterally, has greater potency and more sustained action than the naturally occurring endogenous testosterone and about four times the potency of free testosterone in oil when injected. In the average woman, monthly amounts of 300 mg. of testosterone propionate may be given without interfering with normal menses and without masculinizing effects. The dark-complexioned and brunet woman is more likely to experience these latter effects in somewhat lower dosages, due to larger amounts of endogenous androgens. The dosage of any testosterone preparation has to be individualized in each patient, depending on age, sex, state of nutrition, dietary intake, and presence or absence of disease. The antianabolic effects of the corticosteroids in normal or moderate dosages can be prevented by adequate dietary intake. When large doses are used, the antianabolic effects can be prevented by giving 25 to 50 mg. of testosterone propionate intramuscularly daily and, occasionally, at intervals of two to three times weekly. Androgen therapy does not affect the antiallergic, anti-inflammatory, and/or antibody reactions of the corticosteroids.

VITAMIN B_{12} REQUIREMENT IN ANEMIA

To the Editor:—*Does a patient with pernicious anemia, who is being well maintained on the standard dose of vitamin B_{12} given hypodermically, require more vitamin B_{12} if an infectious disease develops? If so, does the severity of the infection determine the amount of increase required? Have tests been made on such patients who have contracted infectious diseases to see whether they undergo certain blood depletions that would call for more vitamin B_{12}?*

H. Ward Randolph, M.D., Richmond, Va.

Answer.—Although it is usually stated that patients with pernicious anemia should receive an increased amount of vitamin B_{12} when a complicating infection develops, this recommendation is based largely on theoretical considerations. Fortuitous observations have occasionally shown that, when an acute infection develops in a patient with pernicious anemia during the initial reticulocyte response to vitamin B_{12}, the erythropoietic progress may be temporarily halted. In monkeys maintained on diets containing barely adequate amounts of folic acid, the creation of turpentine abscesses resulted in a megaloblastic type of bone marrow. This could be prevented by the administration of folic acid but not vitamin B_{12}. However, other than in serum hepatitis, which presumably seriously compromises the storage function of the liver for vitamin B_{12}, it has not been shown that the serum level of vitamin B_{12} is significantly reduced or urinary excretion increased by infections.

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Even in normal subjects, and more obviously in patients with hemolytic anemias with no detectable evidence of vitamin B_{12} deficiency, certain types of nonbacterial upper respiratory infection may cause a temporary complete cessation of erythropoiesis with cellular hypoplasia of the bone marrow. Chronic infections are commonly associated with moderate anemia due to erythropoietic hypofunction. Characteristic is a fall of the serum iron level and of the level of iron-binding protein of the plasma. Indeed, the deleterious effects of infection on diverse biochemical functions are well known. Some, such as the increased insulin requirement in diabetes mellitus, are reversible. Thus, in theory and by analogy, it is possible that infection may create a need for more of the precursors of biochemical processes concerned with erythropoiesis, perhaps including a need for more vitamin B_{12} in pernicious anemia. Consequently, despite the lack of direct clinical evidence that more vitamin B_{12} will promote erythropoiesis in pernicious anemia during infections, the prudent physician will be well advised to at least double the maintenance dosage of vitamin B_{12} at no great inconvenience or expense to his patient.

STAPHYLOCOCCUS CARRIERS

To the Editor:—*The chairman of the infection committee in a hospital has been concerned as to what to do with the nasal carriers of coagulase-positive strains of Staphylococcus pyogenes var. aureus among key personnel of the obstetrics and surgical services. Specific antibiotic therapy based on sensitivity studies of the organism involved has been recommended. Bacteriophage typing has not been done, as facilities for this service will only accept material from patients with active cases. Some of the personnel rebel at having to take antibiotics when they feel well. Others cooperate with therapy but never succeed in showing negative results on nasal culture after supposedly adequate courses. Others have a temporary loss of nasal staphylococci but have a relapse after several months. In a small community where paramedical personnel of all types are at a premium, such persons as delivery room supervisors or surgical scrub nurses, who cannot be replaced, should not be removed from duty. How important is the role of the nasal carrier? Please give recommendations as to management of nasal carriers in such a situation.*

Helen A. Horn, M.D., High Point, N. C.

Answer.—The treatment of key personnel who have congulase-positive staphylococci in the nose and throat does not consist of giving antibiotics. In the event such organisms are there after acute infections, it is logical, either with the properly chosen sulfonamide drugs or with antibiotics, to clear up the residual infection, but in chronic carriers the usual experience is that these organisms disappear while the subject is under therapy only to reappear within a relatively short time after treatment has been discontinued. The answer to this problem consists of a return to strict medical aseptic techniques. It is largely due to the loss of this factor that hospitals now face the Staphylococcus problem. The reliance has been on anti-infective drugs rather than on properly applied aseptic techniques. Such key personnel may continue to be employed as long as they are taught the tenets of medical asepsis, washing their hands thoroughly after blowing their nose, touching their face, or going to the toilet, as well as thorough washing and rinsing at least three times before proceeding from one patient to another. Type-specific bacteriophage has been used, both as a nasal spray and by intramuscular injection, to clear up the carrier state, and good results have been reported.

PREOPERATIVE TUBERCULOSIS THERAPY

To the Editor:—*A 41-year-old Negress is scheduled to have a hysterectomy for uterine leiomyoma. She was first given the diagnosis of tuberculosis in 1949. When hospitalized she had fever, positive sputum culture, positive tuberculin skin test, massive pleural effusion, and a small, soft infiltrate in the upper lobe of her left lung. The clinical impression was miliary tuberculosis. This was never established, and she was discharged after six months' therapy with streptomycin as having minimal, inactive tuberculosis. Since that time she has had regular chest x-ray and sputum examinations. The soft infiltrate healed without residuals, and findings on x-rays of the chest were essentially negative. Sputum specimens have been negative. Her diagnosis at present is pulmonary tuberculosis, minimal and inactive (nine years), with exercise status 4. It has been suggested that she be given isoniazid for five days preoperatively to prevent relapse of her tuberculosis. If treatment is indicated, what would be a satisfactory regimen?*

M.D., Georgia.

Answer.—Negro patients with pulmonary tuberculosis are more prone to have exudative types of the disease, especially the caseous pneumonic form. This is associated with a high degree of sensitization from a diet high in carbohydrates and congestion in housing allowing for intimacy and a massive dose infection with tubercle bacilli. Negroes have thus had a tuberculosis mortality of about six times that of the white population. They also have had an average sickness interval before death of about one year, compared to three years for white patients. With the marked decline of tuberculosis mortality across the United States to about 7 per 100,000, the racial decreases in proportion to the population have been about the

same. This is most likely associated with the sharp decrease in milk-borne infection and the improved economic status with resultant improvement in housing. This patient should be given isoniazid for about two weeks before and several weeks after operation. The diet should be high in protein and fat, with only the natural carbohydrates in the vegetables. The anesthesia might best be spinal, and if the red blood cell count is low or depleted during operation it should be built up by transfusion.

ORAL TREATMENT OF DIABETES

To the Editor:—*In view of the fact that treatment in the young diabetic is seldom successful with tolbutamide, please give information on what, if any, influence on the unborn child treatment of a 31-year-old primigravida with this drug would have. The patient was recently found to have a low-grade diabetes.* *M.D., Virginia.*

Answer.—Experience with tolbutamide in the management of diabetes complicating pregnancy is limited, primarily because most such patients are of an age group which characteristically exhibits a labile or "juvenile" type of diabetes. In such patients tolbutamide therapy is generally contraindicated. Probably not more than 15% of pregnant patients with overt diabetes exhibit the disease in sufficiently mild and stable form to warrant a careful trial of sulfonylurea therapy. Among those cases of diabetes complicatng pregnancy which have been reported to this consultant in the past three years, all patients were carefully selected for tolbutamide therapy because of the mild and stable character of their diabetes and several pregnancies were carried to a successful termination with delivery of healthy babies. No evidence of untoward effect of tolbutamide therapy on mother or fetus was found. It must be emphasized, however, that the pregnant diabetic is especially prone to the sudden appearance of ketoacidosis in the latter weeks of pregnancy. This complication is a major cause of fetal death. Thus, even the pregnant patient with mild diabetes, if placed on sulfonylurea therapy, must be observed with vigilance in anticipation of the possible development of acidosis and need for pharmacological doses of insulin.

Answer.—Even at the age of 31, a person with diabetes in an early stage may respond well to tolbutamide. Visceral toxic effects are seldom seen, so a favorable opinion would seem to be indicated. This consultant is unaware of any definitive evidence on this point, however, and must therefore advise the use of insulin and/or diet during the pregnancy. All investigators have been faced with the same risks in human subjects. They have been reluctant to make (or at least to report) trials, and no animal experiments have been recorded.

DUTIES OF OPERATING ROOM NURSE

To the Editor:—*An anesthesiologist who recently began private practice in a small city had, all through his training, taken the duties of the circulating nurse in the operating room pretty much for granted, especially in regard to the anesthesiologist. This was challenged recently by the operating room supervisor, and the chief of surgery and the anesthesiologist are now interested in having some references that may have been proposed in the past in answer to the question, "What are the duties of a circulating nurse in an operating room?" For example, during induction, it has always seemed a wise policy to have either the surgeon or his assistant in the room, with the circulating nurse right by the side of the patient, preferably on the side with the intravenous apparatus. The supervisor states that the circulating nurse should have no part in this role. Surely this attitude cannot be in the best interest of the patient. Please give an opinion for presentation at the next surgical staff conference.*

Harold F. Dallas, M.D., Poughkeepsie, N. Y.

Answer.—In a well-known general hospital, the duties of the circulating nurse are not described in a manner limiting her only to the duties associated with the operation. She is available to help the anesthesiologist if he needs her help, but too frequently she is expected to do many of the routine things that the anesthesiologist should do for himself, such as having syringes, ampuls of various medicaments, intratracheal tubes, and laryngoscopes immediately available and his gas machine opened up for use. The circulating nurse should not be expected to do many of these routine things, but she might be expected to lend a hand to the anesthesiologist if it would be of some assistance to him.

WATKINS' TRANSPOSITION OPERATION

To the Editor:—*Until about 1953, a surgeon who had trained in Vienna and Switzerland performed many Watkins' transposition operations in this hospital for the most severe cystoceles. This operation brings the corpus of the uterus down in front of the prolapsing bladder. This surgeon has now retired, and some of the other members of the staff will probably have to perform hysterectomies on some of these women with malignancies. Even those surgeons who have board certification have never seen the technique for hysterectomy under such conditions. Please give information on this complicated hysterectomy.*

Michael E. Connelly, M.D., Sharon, Pa.

Answer.—Uterine malignancy after the Watkins' transposition operation indeed poses a serious problem. Inasmuch as the cervix is usually amputated in this procedure, the probability is that one would

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be dealing with a carcinoma of the corpus. After the transposition technique has been performed, the uterus is fixed in the anterior vaginal wall in an inverted position and access to the uterine cavity for diagnostic curettage or radium insertion is difficult, if not impossible. Thus, material for microscopic examination would be difficult to obtain. Technically, vaginal hysterectomy after Watkins' operation poses no particular problems except that the operator must bear in mind the postfundal attachment of the bladder. It is not difficult to separate the anterior wall of the vagina from its attachment to the uterus. The anterior dissection usually begins at the fundal portion, and the operator works upward into the vagina. However, this is not the operation of choice for uterine malignancy. When a definite diagnosis of malignancy has been made, the following plan should be used: (1) external radiation to the pelvis; (2) a wait of six or eight weeks; (3) dissection of the anterior vaginal wall from the uterus by the vaginal route; (4) closure of the vaginal incision and continuation by laparotomy; (5) a total hysterectomy and bilateral salpingo-oophorectomy (even though the uterine tubes were detached previously), with the postfundal attachment of the bladder borne in mind; and (6) pelvic adenectomy. This plan would offer the best chance for survival.

MUSTY ODOR OF CLOTHING

To the Editor:—*The family of a 45-year-old man complains that his clothes develop a strong, musty odor, which becomes worse after he has removed the clothes and they have been sitting in a laundry basket. Physical examination of the patient gives normal findings. There are no noticeable skin lesions or body odors. Examination with a Wood's light is also negative. The patient has tried soaps containing hexachlorophene, but these have not made any difference in the odor of his clothing. Please give suggestions on study and treatment of this case.*

James F. Hohl, M.D., Ada, Okla.

Answer.—The question of body odors is an age-old problem and one on which the cosmetic industry has built a highly remunerative sales appeal. To properly answer this question it would be necessary to know (1) how long this has been occurring, (2) what kind of work the patient does and with what materials he comes in contact, (3) what his eating habits are, and (4) whether he has a special fondness for certain types of foods. Odors associated with the human body usually come from fats and may be due to faulty catabolism, that is, from changes in the sebum and apocrine gland excretions. Certain apocrine glands have a specific odor which is characteristic for the particular person and cannot be changed. The exocrine glands secrete such substances as indoles and skatoles from the intestinal tract. These odors would be largely influenced by diet. In some persons butyric acid production is high, resulting in strong odors. Since this odor develops in the laundry basket, one must consider bacterial decomposition due to presence of Clostridium bifermentans or Cl. sporogenes. Treatment is sometimes unsatisfactory if due to an inherited tendency. Otherwise, change of diet, elimination of the aromatic substances, use of such digestants as pepsin, a diastase, dilute hydrochloric acid, papain, and bile salts may be tried. The clothing may be soaked in weak potassium permanganate solution immediately on removal. The intestinal flora may be changed by the use of acidophilic preparations.

RESIDUAL FACIAL PARALYSIS

To the Editor:—*What is the value of physical therapy for a residual facial paralysis of 24 months' duration secondary to neuropathy of the facial nerve?*

Bernard Levine, M.D., Oak Park, Mich.

Answer.—Physical therapy for this condition does not usually result in any clinical improvement. Massage and other passive exercises may be of value in the correction of facial disfigurement in this stage, but this has no influence on the rate of return of motor control. Similarly, the use of electric stimulating currents at this time would have no significant therapeutic effect. It does not influence the rate of nerve regeneration in any way. In the early stages, it is useful in retarding the degree of muscle atrophy but will not prevent it completely, and after two years without return of function atrophy has usually occurred to such an extent that stimulation is without effect.

CONTACT DERMATITIS

To the Editor:—*Certain occupations, such as dentistry, dishwashing, bartending, and poultry plucking, require that people who perform them have their hands in water much of the time. Is there any chemical solution which can be used on the hands to prevent fungus growth or other skin diseases?*

T. R. Pratt, M.D., Pismo Beach, Calif.

Answer.—It is well known that occupations in which the hands are moist or wet repeatedly or for prolonged periods favor the development of dermatitis and, occasionally, also of fungus and bacterial infections. The best way to prevent such secondary complications is to minimize wetting and subsequent excessive dryness of the skin by frequently washing and drying the hands thoroughly and

then applying an emollient cream. For that purpose a cold cream of good quality is usually satisfactory. Some state laws require bartenders to use a chemical agent which in itself is a deterrent to infection but which occasionally produces dermatitis. That is the handicap associated with the use of fungicides, bactericides, and the like; therefore, it is best not to recommend them for routine use. A fungus or bacterial infection, when it does develop, is usually more promptly responsive to therapy than a chemical dermatitis from use of protective antifungal or antibacterial agents. An intact normal skin is the best protection against such infection. Minor skin injuries should receive prompt and proper attention, and persons who have dermal abnormalities, such as excessive dryness occasioned by congenital ichthyosis, are more likely to develop dermatitis in such occupations and therefore should be particularly cautious in their activities.

POSTURAL VARIATIONS IN PULSE AND BLOOD PRESSURE

To the Editor:—*In insurance examinations the physician is often asked to determine the pulse and blood pressure with the applicant reclining, sitting, standing, and after three minutes of exercise. What variation should be expected in the normal person? When patients bend far backward or lean far forward for two or three minutes, some have no appreciable change in heart rate while others show a wide variation; this is a constant finding in the same person on repeated examinations on one visit and on subsequent visits. Bending backward in patients with cardiorenal disease or preeclampsia and, to a lesser extent, in those with moderate coronary sclerosis slows the heart. Bending forward gives similar results, but to a lesser degree. Why does bending forward or backward slow the pulse?*

Lloyd H. Murdock, M.D., Zwolle, La.

Answer.—The systolic blood pressure usually falls when a person rises from the reclining position. The change may amount to 10 or 20 mm. Hg in hypertensive persons. The diastolic pressure, on the other hand, is variable and may either rise or fall. The change is usually not great. The result is a drop in the pulse pressure on standing. Exercise usually raises the systolic pressure and may increase or decrease the diastolic pressure, but there is almost always a resulting increase in the pulse pressure. A slowing of the pulse rate associated with bending backward may be due to stretching and consequent stimulation of the carotid sinuses in the neck. This reflex increase in vagal tone is particularly marked in patients with coronary sclerosis. This phenomenon has not been noted consistently on patients leaning forward.

POSTOPERATIVE GENITOURINARY BLEEDING

To the Editor:—*At this hospital a high incidence of postoperative bleeding from the genitourinary tract has occurred recently. The anesthetic used, the patient's position, or the site of operation do not seem to be factors. The condition lasts for only 24 hours, but two cases of renal shutdown have occurred and both were fatal. The urine has been completely bloody, sometimes with and sometimes without cells. Transfusions do not always precede the hemorrhage. The postoperative course varies. Some patients go into shock and others have a normal postoperative course except for the hematuria. Some have indwelling catheters, and others do not. The picture is so varied that it is hard to know where to lay the blame and whether there are several factors at work. Little has been written about this, and any information would be appreciated.*

John J. Rooney, M.D., Nyack, N. Y.

Answer.—On the information given, it is presumed that imperfections in surgical technique have been ruled out. The next procedure is to have the blood being used for transfusion checked and cross-checked for correct typing. If such blood is perfectly compatible, the staff, having found a new and local syndrome, should make a detailed study of it. Such simple things as platelet count, prothrombin time, and presence or absence of serum fibrinolysins should be investigated. If staff members were greatly interested, they could carry out more elaborate studies on coagulation, though use of the three tests mentioned would probably point the way to further studies.

POSTOPERATIVE CEREBROVASCULAR COMPLICATIONS

To the Editor:—*What cerebrovascular complications are likely to occur after mastoid operations? Would carotid artery thrombosis follow such an operation? What complications might result from packing of the jugular bulb?*

M.D., Louisiana.

Answer.—The common cerebrovascular lesions associated with mastoid disease are thrombophlebitis of the sigmoid sinus, the petrosal sinuses, the jugular bulb, and, occasionally, the cavernous sinus. Thrombophlebitis of these sinuses is not as a rule a complication of mastoid operation but is the result of the disease in the middle ear, mastoid, and/or petrous pyramid for which the operation was performed. There is ample evidence that when these complications have progressed or have become evident only after operation it has been because the operation was not adequate to deal with the lesion present. Such lesions have usually

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been either an already existing but undetected thrombophlebitis or an undrained focus of suppuration in the temporal bone which later involved a venous sinus. Discussions of this question are found in any standard textbook, such as "Otolaryngology" (edited by G. M. Coates and others, Hagerstown, Md., W. F. Prior Company, Inc., vol. 2, chap. 15).

Carotid artery thrombosis in the neck is being increasingly recognized as the underlying mechanism in some cerebrovascular accidents. Most of these cases are spontaneous and are associated with arteriosclerosis, but the condition has been reported after nonpenetrating injuries to the neck. The article by Murphey and Miller (*J. Neurosurg.* 16:1, 1959) may be helpful.

CATARACTS

To the Editor:—*It has been thought that many more young people now than formerly are developing cataracts. If so, is there any etiological explanation for it?*

W. O. Bailey, M.D., Washington, D. C.

Answer.—There are no statistics which indicate that senile cataracts are occurring at a younger age. The cause of cataracts is unknown. There is an impression among many physicians that cataracts are developing at an earlier age. With the development of the intracapsular operation, undoubtedly immature cataracts are being operated on at much earlier stages than heretofore. This is probably the genesis of this impression.

CONGENITAL ANOMALIES

To the Editor:—*A patient belongs to blood group B and her husband to group O; both are Rh positive. She has never had any transfusions. Her first child died a few seconds after birth and had hydrops fetalis, club foot, and other anomalies. In the last month of pregnancy the patient suffered from hydramnios. Is it advisable for her to become pregnant again? What are the chances that she will have a normal child?*

M.D., New York.

Answer.—The results of the blood grouping tests in this case rule out any major blood group incompatibility, so that isoimmunization of pregnancy can probably be excluded as having any bearing on this couple's problem. It is not possible to ascertain the cause of the hydrops fetalis responsible for the baby's death; therefore, no definite statement regarding the probable outcome of future pregnancies can be made. It has been reported that fetuses with certain congenital anomalies may develop hydrops in utero, and this in turn may be complicated by the development of polyhydramnios. The cause of congenital malformations is not known, though there is evidence that hereditary factors play a role, as well as such other factors as nutrition of the expectant mother and the mother's age. Among 500 mothers who gave birth to a malformed child, Murphy found that 275 (55%) experienced subsequent conceptions and that 25 had one and 9 had two additional malformed children (Congenital Malformations, ed. 2, Philadelphia, J. B. Lippincott Company, 1947). These facts should be presented to the couple, and the ultimate decision of whether to undertake additional pregnancies must then rest with them.

INTRAOCULAR PRESSURE AND HYDRATION

To the Editor:—*What is the relationship between intraocular pressure and the underhydration or overhydration of patients? Numerous observers have observed soft eyeballs in diabetic coma and other states of dehydration, but, in states of overhydration, has an increased intraocular pressure been conclusively proved?*

M.D., Washington.

Answer.—A number of stimuli may cause transient changes in the intraocular pressure, and included in these factors is the osmotic pressure of the blood. The normal eye, however, is characterized by homeostatic mechanisms that quickly adjust the intraocular pressure to normal. The administration of a large volume of hypotonic fluid decreases the osmotic pressure of the blood plasma. Presumably the osmotic pressure of the aqueous humor is increased relatively, and dilution of the aqueous humor to the corresponding osmotic pressure results in an increased aqueous volume and an increased intraocular pressure. In the normal eye this increase seldom exceeds 5 mm. Hg within an hour of ingesting 1 liter of water. In a glaucomatous eye the pressure may increase more than 10 mm. Hg. Similarly, substances which increase the osmotic pressure of the blood, such as hypertonic glucose solution, a 5% solution of urea, sorbitol solutions, and the like, tend to decrease the intraocular pressure. There is an extremely large amount of literature on this topic. Much of it is surveyed in the review of glaucoma which appears each year in the December issue of the *A. M. A. Archives of Ophthalmology.*

HAIR LENGTH AND BALDNESS

To the Editor:—*Please give advice as to short hair versus long hair for men. Does the length of the hair have any relation to loss of hair?*

Jerome Kogan, M.D., Stamford, N. Y.

Answer.—Short hair or the cutting of hair has no relationship to receding hair or the prevention of hair loss. This fact has been verified by many separate investigations on numerous occasions.

CONTACT LENSES

To the Editor:—*What is the best type of contact lens? Is a lens with radial grooves around the outer edge advantageous in allowing free circulation of lacrimal fluid beneath the lens?*

P. M. Stoddard, M.D., Fairmont, W. Va.

Answer.—Contact lenses may be worn to improve appearance, as a substitute for spectacles where spectacles are not feasible (as in sports and certain occupations), and to obtain visual improvement not possible with spectacles (as in keratoconus or corneal scarring). There are two general types of contact lenses, each having advantages and disadvantages. Corneal contact lenses are cosmetically the most acceptable and are most easily tolerated, but they are not very satisfactory in contact sports (boxing and wrestling) and hazardous occupations. Scleral contact lenses are less satisfactory cosmetically and not tolerated as well, but they can be worn for any type of use. In most communities, the proper fitting of contact lenses requires the combined skills of the ophthalmologist and a technician trained in this work. The section of ophthalmology of the local medical society can make available the names of such persons. Contact lenses with radial grooves have the advantage of allowing the normal tears to serve as a fluid under the lens and are thought by some to be superior to those not having such grooves.

DERMATITIS AFTER EXPOSURE TO SPUN GLASS

To the Editor:—*A 52-year-old woman used spun glass to decorate a Christmas tree two years ago. She touched her forehead with it and has had an irritation of the forehead ever since. Every two to four weeks she has an eruption on her face. Burning and itching will disappear after a short time and then return. Please suggest treatment.*

E. T. Sager, M.D., Marion, Ohio.

Answer.—Spun glass is a pruritogenic substance capable of causing a dermatitis, but an eruption due to this agent would not recur every two to four weeks without further exposure. Herpes simplex or a dermatitis medicamentosa would be more apt to recur in this way. Therefore, the first step would be to make a morphologic diagnosis. There are no agents that uniformally prevent recurrence of herpes simplex. Smallpox vaccinations (one every two weeks for at least three treatments) will interrupt some cases. A careful history should be taken, and if any drugs, including self-administered analgesics, laxatives, or sedatives, capable of causing a dermatitis have been used at intervals, they should be eliminated. The possibility of a recurrent contact dermatitis should be considered also. Elimination of suspicious contactants from the patient's environment would be recommended. Patch testing may be necessary.

CARCINOMA AND THROMBOPHLEBITIS

To the Editor:—*An article stating that some types of carcinoma give rise to thrombophlebitic phenomena prompted this question: Does endometrial carcinoma give rise to such signs? A 63-year-old woman has had vaginal bleeding associated with carcinoma, but she has also had two or three such episodes in the past that led to the diagnosis of phlebitis of the lesser saphenous vein of the right leg.*

John K. Griffith, M.D., Valley Falls, Kan.

Answer.—Some types of carcinoma, particularly those of the pancreas and occasionally of the lung, give rise to idiopathic recurrent thrombophlebitic phenomena. Malignancies in the female pelvis or tumors compressing the great vein may produce stasis and cause thromboses in a pelvic vein. The fact that the patient had involvement of the same vein, the right lesser saphenous, would suggest a local process rather than a humeral mechanism, which usually produces a migratory phlebitis. A physiologist, an expert on coagulation, stated that endometrial carcinoma could theoretically increase the tendency to intravital clotting, but none of the consulted gynecologists, obstetricians, or internists have seen a patient with migratory thrombophlebitis associated with endometrial carcinoma.

SHORTENED FEMUR

To the Editor:—*During a routine examination, a 32-year-old woman said that she had had a fractured femur in 1948, with shortening of the involved limb by 1 in. She has no complaints referable to her back, but physical examination showed the expected pelvic tilt. She does not wear corrective shoes. In the course of her life is she likely to develop any disability from a pelvic tilt? Is it necessary to compensate for the limb shortening with an elevated shoe, and, if so, what would be the minimal lift required?*

J. E. Rockwell Jr., M.D., Grangeville, Idaho.

Answer.—Some heel raise would be advisable to prevent backache in the future. It is frequently not necessary to make up the entire difference, but in this case an increase of three-quarters of an inch should be provided, since a patient can compensate very well for one-quarter of an inch. This heel raise is best accomplished in stages. The heel of the short leg should be raised one-fourth of an inch and that of the higher lowered one-fourth of an inch. After about three months the heel of the short leg should be raised another quarter of an inch. This method usually is better than taking all of the correction on the affected heel.

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